The Builder.

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Mountain-Building.

EXCEEDINGLY few works have been written exclusively on the theory of mountain-building, and no monograph, so far as we are aware, had appeared in the English language before the publication of the work now before us.* The author being both a civil engineer and an architect has incorporated a few observations which apparently came under his notice in professional practice, in illustration of some of the points of his work, and it is our intention to speak firstly of these and then pass on to the purely scientific part of the book.

In considering what effect a local change of temperature would have on the earth's crust, he points out the results of expansion on external objects, such as chimneys, kilns, metal-work, rails, bridges, roofs, girders, and masonry. He observes that a vessel formed of such a ductile material as lead, if repeatedly heated and cooled, permanently increases in size with every such operation. "In laying small sheets of lead or zinc the metal must be free to move or it will quickly rupture by changes of temperature. Hence in all good roof-work, if of lead or zinc, soldered joints are rigidly excluded. Notwithstanding all these precautions, one has only to examine an old lead roof to find it covered with ridges and puckers. These ridges arise from the accumulated small superficial expansions which imperceptibly affect the lead, but the low tensile strength and ductility of the metal will not allow it to regain its form by contraction."

The distortion, however, occurs in a more perfect manner in vessels lined with lead, for the metal in such cases has very little play. "Who has not noticed the ridges on an old bath lined with lead?" To further illustrate this portion of his subject, the author made several experiments by heating sheets of lead and observing the permanent results. Four good ink-photo plates are given to show the effects of superficial expansion on these. One of them is a fac-simile of a butler's pantry sink, where a ridge is shown to have been formed by the contractions and expansions produced by the ordinary alternations of hot and cold water.

With regard to the effects of expansion by heat on brickwork, he observes (p. 12) that "Any practical man, who has had experience of setting of boilers, the building of chimneys, or the erection of kilns, knows that the effect of such heat as they are subjected to is very destructive of the structure. It arises from two causes,—first, the unequal expansion of the heated interior compared with the cooler exterior; and, second, the low tensile strength of brickwork. The heated interior brickwork expanding, ruptures the exterior, which expands less. This effect does not follow from one operation, but through repeated heatings and coolings. At every heating the brickwork is moved, but in a way imperceptible to the eye, and it does not recover its original dimensions on cooling. The accumulated results of these internal movements soon, however, become sensible by rifts in the brickwork. To counteract these destructive forces, it is usual to bind the brickwork together with iron rods or hoops, which, having a high tensile strength, hold the work more firmly together."

The author, in addition, quotes the opinion of Herr Eckhartz in the *Builder* of March 17, 1883, p. 362, wherein he dwells upon the use of iron-hooping, and remarks that its object and result are not, strictly speaking, the prevention of extension, but rather the attaining, in the outer brickwork, of a uniform distribution of the tension, and the prevention of its concentration at certain points.

The effects of expansion by heat are also exemplified by the well-known fact that a line of hot-water pipes for heating a building requires considerable play, even though never rising above a temperature of 212° Fahr., and has to be fitted in places with expansion-joints, otherwise the pipes would fracture, or the ordinary joints leak. The expansion of railway metals by the heat of the sun is also considered, as well as the buckling of plates on the sides of a series of girder bridges. With reference to the latter, the author states that some of them have domed up from $\frac{5}{8}$ in. to $\frac{3}{4}$ in. in plates 1 ft. 8 in. wide. The effect is quite striking, and he is satisfied that it is mainly the result of changes of temperature, as in every case it is the south side exposed to the mid-day sun which is mostly acted upon.

A series of experiments on the effect of heat in expanding different kinds of building and other stones were conducted by the author, and the results given in detail, together with their co-efficients of expansion. These trials were in most cases made with dressed bars of stone about 15 in. long, but of various scantlings, best suited to the material. The ends were dressed square. Each stone was tested several times, and the mean of the observations taken as the correct result. Summing up, we find the mean co-efficients of expansion of various rocks, as determined by the author's experiments, to be as follows:—

Sandstones	$\frac{1}{178,825}$
Marbles	$\frac{1}{184,797}$
Slates	$\frac{1}{193,827}$
Granites	$\frac{1}{203,322}$

These results do not in most cases greatly differ from those of Mr. Adie in the Trans. Royal Society, Edinburgh, vol. xiii., p. 366. The author also refers to the well-known experiments on American building stones under Col. Totten, the object of which was to ascertain the cause of the fissuring of the joints of coping-stones in certain buildings, it having been found impossible to keep the joints perfect for more than a few weeks. The conclusion arrived at was that the fractures were due to ordinary changes of temperature.

Passing on to the purely geological portion of the work, we observe that the author firmly believes that the earth is solid throughout, and that although heat increases with the depth in the crust of the earth, and that a depth would eventually be reached at which any known rocks would be melted if they were at the surface, yet they are prevented from melting by reason of the pressure of the superincumbent rocks. He further believes that upon any sufficient release of the pressure, portions of such underlying rocks would assume a molten state, and that, therefore, the material below a certain depth, although being actually solid, may be described as being in a *potentially liquid* condition. When in that condition, they act as a plastic mass, and differ in their relative strengths in resisting the superincumbent pressure, so that, on contraction, the subsidence that must follow causes strains which, although occasionally are met by the strata merely bending, are oftener eased by sudden snaps producing faults. The nearest parallel to this state of things, he observes, is that of the walls of a building on a foundation of differing degrees of solidity, under which circumstances the building will very soon tear itself to pieces.

Up to this point, we have refrained from offering any criticisms of the work. One has only to read it through to be convinced of the great amount of care and thought the author has bestowed upon it. But there are, nevertheless, many points that, in our opinion, materially affect the bases of some of his hypotheses. We entirely agree with the author as to the solidity of the earth, and the absence of a fluid stratum beneath the crust, as we think that, on the whole, this is the condition which most readily accords with the known facts of

* The Origin of Mountain Ranges considered Experimentally, Structurally, Dynamically, and in Relation to their Geological History. By T. Mellard Reade, C.E., F.G.S., F.R.I.B.A., &c. London: Taylor & Francis. 1886.

geology, on this particular line of research. We are also prepared to believe in the plasticity of the potentially liquid mass and in the portion of the crust for some distance above it. It would also be idle for us to dispute that local changes in temperature, due to thick sedimentation in certain areas, cause a corresponding rise in the isogeotherms under those areas, the result of which would be expansion of the rocks so affected. The author's arguments on these heads are in many instances both novel and conclusive, and on this portion of his work we cannot too highly compliment him.

But we cannot agree that the effect of this sedimentation, and the consequent rising of the isogeotherms, and attendant results, are such as to be great factors in producing the phenomena of the elevation of mountain ranges. It may have a *little* to do with it, but we think that the principal effect of such thick sedimentation is to cause the slow movements of large continental areas. Besides, there are areas where the sedimentation has been of very great thickness, and where no mountain ranges have resulted from this loading. If the author's theory is the correct one, we cannot account for this. Looking at the matter from another point of view, we might say that unless a considerable thickness of rock were in existenee before mountain chains were formed, there would have been nothing for them to have been made out of. We do not think, therefore, that any theory need be formulated to account for the connexion between mountain ranges and thick sedimentation.

We are pleased to see that the author does not attribute the corrugation of the earth's surface to the contraction of the nucleus (p. 125).

Speaking generally, it appears to us that he has not laid sufficient stress on the effects of the subsidence of large ocean bottoms, and the great weight of water thus accumulating on those portions of the crust immediately subjacent. Take, for example, the Pacific Ocean, the greater part of which has been formed in recent geological times by the subsidence of the land which now forms its bottom. Concurrently, volcanoes and mountain ranges appeared all round its shores from Cape Horn, through Chili, Peru, Central America, the Rockies, Aleutian Is, Japan, and so on, until New Zealand and even the land of the Antarctic continent are reached. Surely this is not without its significance, in dealing with the hypotheses connected with mountain-making. We cannot think that the deposition of the sediment,—however thick,—forming the mountain ranges referred to, has had such a stupendous effect, in the elevation of those mountain ranges and adjacent land, as to cause the snbsidence of the land which is now the bottom of so great a part of the Pacific.

Again, we should like to have seen more notice taken of the action of extra-terrestrial bodies on the earth. We allude, of course, to the attraction of the sun, moon, &c. In our opinion, the silent forces which are capable of producing tides, the precession of the equinoxes, nutation, and changes in the obliquity of the ecliptic, have had a very considerable share in the formation of mountain ranges. We must not forget, either, the high probability of the instability of the earth's axis, changes of the earth's centre of gravity, or, indeed, the significance of the connexion between the periodicity of earthquakes (and attendant phenomena) and lunar attraction, as has recently been advanced and reported in our columns. All these things and more have had their share of work in twisting and corrugating the earth's surface.

We would not by such criticisms desire to convey to the minds of our readers that the work is not up to the mark. It must be remembered that the author has attacked a most difficult subject, and one about which it is quite impossible, in the present state of our knowledge, to dogmatise, as he himself, of course, admits. The work marks a distinct advance of, and is a valuable contribution to, physical geology, and must take its rank accordingly; for, whatever the value of the hypotheses he has brought forward, they are interspersed with a large number of facts, which future writers will not fail to take advantage of in some way or another. Enough has been said to show that there is much in it of interest to our readers, especially in connexion with the effect of heat on various building materials. The work is well and very profusely illustrated by ink-photos.

ACADEMIC QUARRELS.

THE incidents which would seem to have marked the recent elections to fill the gaps in the ranks of the Royal Academy are curiously calculated to prove how history repeats itself. Little as is actually known of a transaction which is usually conducted amidst the most dignified secrecy, enough has transpired to show that the causes of friction between the President and his brother Academicians closely resemble a very similar disagreement which occurred a century ago among the members of the then only recently-formed institution. At that time as now, the difference would seem to have turned on a purely personal source of irritation, and as is sometimes apt to occur on these occasions the friends of the "outs" would seem to have expressed themselves warmly respecting the backers of the "ins." Such quarrels are, of course, no novelty to those familiar with elections, of whatever description, but when they break the dignified ease and calm of academic life they smack almost of sacrilege. There is an air of staid respectability surrounding all academies, but especially our own Royal Academy, which is, strictly speaking, the sole existing Academy in our country. The divinity which hedges the governing body whose deliberations are held at Burlington House has, however, once again been rudely broken in upon, and in the causes of the difference the opponents of the Academy, who of late have been expressing themselves somewhat warmly, will, it is to be feared, have found fresh grounds for their attacks. In the quarrel in which Sir Joshua Reynolds was only with difficulty induced to withdraw his resignation the disagreement turned, it may be remembered, on the refusal of the Academicians to raise from the rank of Associate Reynolds's friend, the architect Bonomi, whom the President very rightly considered would admirably fill the then vacant chair of Lecturer on Perspective. But the clique which supported Fuseli manœuvred with such apparent animus against their chief and his nominee that the President resigned. He returned to office, it is true, but a few months later he delivered the last of his long series of discourses, the collected edition of which is to this day presented to each medal student of the Academy. Fortunately, it is rarely that Academic quarrels reach such a pitch of acrimony as to result in open warfare, but it may de safely said that no election of members passes without a considerable display of personal friendship and animosity between the too-often conflicting "sets" into which every body of men belonging to one profession seem inevitably divided. Potter hates potter, a Greek proverb tells us, and united in their aims as Associates and Academicians may be, they are no less subject than other mortals to human influence, not to say weaknesses. Some of the most deeply-rooted failings of humanity would seem to be exhibited in the causes which dictate such quarrels as spring up among brother academicians, and to which academies at all times have owed the absence from among their number of some of the greatest names in literature, art, and science. Even the French Academy, the model of all such institutions, is not free from this defect.

The story of the forty-first *fauteuil* of the Académie Française has been brilliantly related by M. Houssaye, and the fact that that imaginary throne of honour has been occupied by some of the most eminent names in French literature,—Pascal, Molière, Diderot, Rousseau, Beaumarchais, Descartes, Béranger, Balzac, Théophile Gautier, Dumas, Georges Sand, among others less familiar to English readers,—is a point which certainly "scores" for the opponents of academic exclusiveness. This spirit and the bickerings it never fails to rouse are the chief origin of the quarrels which seem to be inseparable from academic life. In the case of our own Royal Academy, it is to be regretted, for the sake of our national art, that such disputes tend to prove the assertions of those who urge that the Academicians are more interested in the promotion of their own personal interests than in carrying out the aims laid down in the famous "instrument" granted them by George III. "for the purpose of cultivating and improving the arts."

The arguments in favour of and against the influence of academies have often been brought forward. That influence has been accused of fossilising into nerveless tradition the living bones of free inspiration. Nothing, in fact, is easier than to criticise academic institutions, and the errors into which they fall. Whenever the controversy is revived,—and it would seem to enjoy a perennial vitality,—it seems too frequently forgotten that the real aim of an academy, whether it be connected with the arts, with literature, or with science, is not, and never can be, to satisfy the various personal sympathies and antipathies of the public, however intelligent that public may be. When, two centuries ago, Richelieu founded the famous French Academy, his intention was to form a high court of letters, to give, as Mr. Matthew Arnold has said, the tone to literature, and that tone a high tone. An academy, in fact, to carry out its true aim should be a sovereign organ of opinion, an authority which in addition should practically influence the current of public opinion. All readers of Mr. Matthew Arnold know with what brilliancy that master stylist has regretted the absence of such a standard in the literature of our own country, which individually has enriched the world with so many creations of pure genius. The arguments in favour of an academy of letters tell far more powerfully in behalf of the arts. It is on the point whether the Royal Academy represents this high standard, that should turn, and turn solely, the criticisms addressed to the Burlington House authorities. Does that body in its exhibitions show its encouragement of the highest work, not necessarily in the productions of its own members, who are privileged, but with the creations of the "outsiders" whose names (in smaller type) are admitted to a place beside their own in the pages of the familiar blue-paper covered catalogue. Unless these conditions be fulfilled the Academy must submit to the attacks to which it is yearly subjected, and its members must expect the recurrence of constant internal dissensions. It is singular how obstinately the Burlington House authorities seem to place themselves in the power of their enemies. Each year, as May comes round and "the Academy" is opened, the rejected ones are able to draw attention to exhibited works which no stretch of kindness can argue are up to the standard of merit which the Academy should uphold. The injurious effects of this are incalculable. In a past when the Academy was the one of the two or three exhibitions in which the English artists could show their year's work, the conditions of admission were different; but now, when certain streets in the West-End seem exciusively devoted to fine-art galleries, Burlington House could afford, without cruelty, to reject even a larger number of works than at present is the case, and the exhibition would then present a severe standard of English art, by which the public taste might be influenced, and the level of general "journeyman work" raised. It is because within the Academy itself there are members who hold these views that once again a quarrel has broken out between the representatives of the typical "Academic" traditions and the younger enthusiasts who would see the institution to which they belong boldly carrying out the aims for which their charter was originally granted.

The Proposed Liverpool Cathedral.—Sir A. B. Walker has signified his intention of giving 10,000*l.* to the building fund of the Liverpool Cathedral.

NOTES.

MR. J. OLDRID SCOTT and Mr. Seddon have prepared a memorial for presentation to the Committee of the Liverpool Cathedral, to which they ask for the signatures of all architects who feel interested in the matter, desiring that the designs submitted in competition should be exhibited in London "for the purpose of eliciting the best skilled and widest public opinion on them." This is a compliment which Mr. Ewan Christian will no doubt appreciate equally with ourselves, the implication being that they have not received such "opinion" so far. Nevertheless, we are quite in the mind that it would be a matter of interest to have the designs exhibited in London, though it must not be forgotten that they have already received considerable general publicity through the illustrations in this and other journals, one of our contemporaries, indeed, having been so eager in the good cause as to produce them from our plates, failing other means. It cannot be said, therefore, that "this thing was done in a corner." Inasmuch, however, as the obvious intent is to re-open the discussion as to the selection of the designs, we hold that the proposition would have come better from persons outside the ranks of the architectural profession, who, we must plainly say, are a great deal too fond of endeavouring (of course in the interest of art) to upset competitions which have been fairly decided. *Au reste*, we imagine the "most skilled public opinion" really means that of the "church party," who want to stereotype church architecture on the Mediæval model; or, perhaps, Lord Grimthorpe is to write an article on the designs. In that case all concerned would be certain of amusement, if not of instruction.

ON the 28th ult. Baron de Worms received a deputation of Lancashire and Cheshire trade representatives on the subject of the proposed Government legislation on railway charges. The deputation wished to impress their views upon the Board of Trade as to the injustice involved in the principle apparently guiding the railway companies in fixing their rates, their own opinion being that the charge was often out of proportion to the service rendered. Judging from the Baron's reply, he was in entire sympathy with the traders, for he fully endorsed their views; and the Bill about to be introduced in the House of Lords will, doubtless, be quite as comprehensive as Mr. Mundella's. He expressed his belief that satisfactory remedies for their grievances would be found in the measure, and stated that the Government were prepared to give the fullest consideration to any suggestions. A notable defect in last year's Railway Bill was the absence of any practical clauses for the regulation and more efficient management of canals, Mr. Mundella admitting, after its introduction, that he had come to the conclusion that in this respect he had failed to make any satisfactory provision. It has been stated in the House of Commons that there are thirty-nine canals, with an aggregate length of 1,436 miles, under the direct control of the railway companies, several others being also in their hands to a great extent. Recent events connected with canals communicating with the Thames and the Severn, go to show that it is very probable that the fact of railway part ownership prevents the public from deriving that benefit from them which they are calculated to afford. The Great Western Company deny that the inefficiency of these waterways is due to any action of theirs (though it may be said, in passing, that the complaint is of inaction), and it is still an open question; but this, and other cases of a similar nature, will doubtless come under discussion when the matter is again before Parliament, and this particular question should receive more prominence in the forthcoming measure than it has done in former ones.

WE observe that one of our contemporaries has been commenting upon the line of frontage laid down by the Superintending Architect of the Metropolitan Board of Works in what is known as the Brixton-rise and Trent-road case, and the question of the legality of his certificate has been brought before the House of Commons, — when the Chairman of the Board stated that the Board had no powers to interfere in the matter; and we are inclined to think that the Chairman's reply was in accordance with the law upon the subject, as also with recently-reported cases. The Superintending Architect is appointed by the 25 and 26 Vict., c. 102, as a statutory officer to define lines of frontage, and in this character the Metropolitan Board of Works have no power to interfere with his decision, which is final, and cannot be impeached in any way.

IT is a reassuring thing for English travellers and intending residents abroad, when they see the authorities of a city actively bestirring themselves to remedy their sanitary defects; and it is seldom that we meet with such determined efforts to improve the public health as are now being made in Florence. The city has recently been the scene of some serious aspersions on the score of health; and although a one-time resident defended her with more zeal than discretion, his figures were soon pulled to pieces, as proving too much. There can be no doubt that Florence, while fairly free from great epidemics, is not nearly as healthy as she ought to be. Few cities, either at home or abroad, are more carefully swept and garnished; and even in the slums around the Ghetto, such as Pelliceria or Calimari (where the cholera alarm took place last June), the smells are not unbearable, nor are the accumulations allowed to become too marked. The chief difficulties are the length and intricacy of the sewers, the cesspools, and the drinking-water. Everybody knows, and Florentines best of all, that if their fair city gets a bad name, they might as well efface themselves from off the earth. Neither Raffaelle, Michelangelo, nor Donatello will attract visitors, if it is known that the drains are all wrong; and the Syndic and his followers are acting sensibly in acknowledging the evil, and resolutely bending to its cure. The Hygienic Society is doing its best, not only theoretically but practically, to inquire minutely into the conditions of typhoid; and the inquiry naturally brings to light many hitherto unsuspected errors of sanitation. Even now, the wells are being examined, the sewers flushed, and publicity given to all hotels, pensions, and lodgings, where proper drinking-water is supplied. This is especially necessary, in view of the enormous crowds which may shortly be expected to assemble at the opening of the new façade of the Duomo.

APART altogether from the question as to cause of the death, at Chiswick, of the girls Wilkes, and the serious illness of the mother and other members of the family, which cannot possibly be known till the analysis of the food is completed, a deplorable case of over-crowding is presented. The mother and the six children slept huddled in a bedroom measuring 9 ft. by 8 ft. There were three unoccupied bedrooms besides, one of them containing an uncovered bed, in the house. It is a case, however, which only the closest watchfulness on the part of the sanitary officer would find out, as the general accommodation, so far as outward appearances are concerned, was ample for the family. It is reported that the sanitary condition of the house is distinctly bad; the atmosphere of the house was so stiflingly impure that an experienced ex-nurse only remained in it, under great trial, to wash the insensible children. It is rather surprising to find this sad sanitary condition of things in Chiswick, which only quite recently made a house-to-house inspection. But it seems the Local Board have not fully recognised the importance of the necessary corollary to this action,—effective steps to require the remedying of all sanitary defects. Inspection is of no use unless it be promptly followed by remedial action.

EVEN if Londoners had not daily before their eyes the smoothness and the almost perfection with which the Fire Brigade turns out for action, Captain Shaw's report and the statistics embodied in it would make us feel assured thereof. The year 1886 showed a list of 2,149 cases of actual alarm in which more or less serious damages resulted, not to mention false alarms or chimney fires. And when we come to think of the extensive area over which the little army (only 539 altogether) is liable to be called at any moment, night or day, it is simply marvellous with what success the great demon is kept under. At the same time, we cannot disguise from ourselves that both the number and the size of the London fires have been increasing at an alarming rate the last few years, though it is true that 1885 exceeded even 1886. Another serious matter is the lamentable loss of life, which is undeniably on the increase. This seems to point to some defects in the life-saving apparatus.

THE delegates of the Edinburgh Free Library Committee, after having examined the several sites considered eligible for the central library, have recommended the site on the west side of George IV. Bridge, immediately to the south of the Highland Society's rooms, and opposite to the Sheriff Court Buildings. The estimated cost of the site is 11,000*l*. The recommendation was submitted to a full meeting of the Library Committee, and it was unanimously adopted, and the site in question fixed upon. The superficial area of the proposed site is stated to be ample for the requirements, affording an available floor space of 1,950 ft., which is capable of accommodating 150,000 volumes. The foundations of the new building will be upon the low level of the Cowgate, and will necessitate the removal of several old buildings in that street. The principal entrance will be from the high level of the bridge, having an elevation of three stories, beneath which will be other three stories. A report is to be given by an architect as to the best manner of constructing the proposed building, and it is probable that designs will be called for by an open competition.

AT a meeting of the Edinburgh Town Council on Tuesday last, it was agreed to ask the Executive Committee of the International Exhibition to remove all the buildings from the West Meadows at an early period. It was reported that fifty-five competitive plans had been received for the new Municipal Buildings, and arrangements were made for selecting those which are entitled to the awards. The successful plans are afterwards to be exhibited at the Council Chambers for the benefit of the public. This appears to us to be putting the cart before the horse. The real use of exhibiting competition drawings is to get general criticism and public opinion; to exhibit them after the award is made is to lose all the advantage of that.

WE mentioned a few weeks back that a series of plinths, bearing sculptors' signatures, of the school of Aphrodisias, had been discovered in the Sette Sale. We are glad to learn from the last issue of the *Bulletino della Commissione Archeologica* that one of the statues belonging to a signed plinth has been successfully reconstructed. The statue represents Poseidon life size. The head is finely worked, and in excellent preservation. The body, with portions of both arms and legs, has been put together. The feet still adhere to the plinth, which is covered with a series of curved lines to indicate the sea. The right arm seems to have leaned on the trident. The inscription is clear, and can easily be restored:—

"Φλ(αούιος) Χρυσίρω(ς) ('Αφρο)δεισ(ιὺς)
(ἱπο)ιει."

This gives us a clear instance of the type of the god Poseidon at a definite date, and hence a fixed standpoint for the dating of many other unsigned statues.

IN our number of the 27th of December, 1884, we described the new buildings for Hatchett's Hotel and "White Horse Cellars," at the corner of Dover-street, Piccadilly, which were opened on Monday, the 19th of January

following. On the 26th of January last (1887) the premises were put up for sale by auction, under order of the Court of Chancery. The sale at the Auction Mart realised 65,000*l.*, the purchaser being, it is reported, Mr. R. Pratti, of No. 45, formerly the Ship, Charing-cross. The ground plot contains about 4,550 superficial feet, excluding the vaults beneath the pavements. This freehold site was sold for 70,000*l.* about four years since. The land-tax having been since redeemed, the existing premises were erected at a cost exceeding 32,000*l.* What Limmer's, in Conduit-street, used to be to patrons of the ring and the turf, so was Abraham Hatchett's hostelry to the high-class gentlemen of the road. It served, in fact, for head-quarters of the mail coaches that travelled into the West of England. Hazlitt says that the finest sight in the metropolis is the setting off of the mails from Piccadilly,—a scene depicted in Rosenberg's print, after J. Pollard, of 1828. In Holcroft's yet popular play, "The Road to Ruin," will be found Goldfinch's rattling account of the wedding coach he had just ordered at Hatchett's. That "all-flash" equipage, could it be reproduced to-day, with its striped panels, fringed hammer-cloth, and green and white curtains festooned, and team of grays, would form a startling feature of the view whose pristine glories a recent revival has partially restored. Some relics of the former house are preserved here; amongst them an oaken drain-pipe, the smoke-jack, and game roasting-hook, the toasting contrivance, and the sign-board bearing the first proprietor's name.

A PARAGRAPH in the *Standard* of the 31st ultimo records the death of the Marquess de Foulon, architect, at the ripe age of ninety-two. He was the son (or nephew) of that Foulon who in the French Revolution told,—or was believed to have told,—the famishing populace to "eat hay." They set upon him in his carriage in the streets of Paris, murdered him in the presence of his wife, stuffed his mouth full of hay, and hanged him on the next lamp-post. We have heard the son recount the facts, while denying the assigned cause. He was, while a young man, the pupil of Nash, and used to meet at his house, among the society of that day, Brummel, the elder Pugin, Mathews, and the Prince Regent. He was full of anecdote, and recounted, with frank speech and much genuine humour, the sayings and doings of the jovial spirits of that practical joking age. He tried his fortune in America, and built more than one theatre in New York, but returned to this country partly though lack of employment and partly through dislike of the Yankee of the period. At seventy years of age he was employed in the Works Department of one of the Government offices. He had all the vivacity of a young man,—stood the whole day at his drawing-board, and walked to and from his work daily. He was a perfect gentleman, and had something of the grand manner about him, and although he never obtruded his affairs or his history on his companions, he would, upon a little encouragement, be communicative, and was on such occasions extremely interesting. As a water-colour artist he had considerable skill, although his work was of a kind now obsolete,—purely conventional, and having but little real resemblance to nature. We hope that a full memoir of him will be forthcoming, for so long and varied a professional career cannot but be worth relating by those who have time and materials for the task.

IT appears that the Royal Academy, under the recent pressure of public opinion in favour of "reform," has voted, by a majority, for a scheme by which 100 privileged "outsiders" are to be selected, whose works will have priority of choice in hanging, after those of R.A.'s and Associates, of course. This appears to us a very clumsy expedient, merely creating another privileged class, and leaving painters of genius who have not been brought under notice in making the selection still the probability of having their works turned out for inferior but privileged ones. The question to be settled by the Academy is this: do they intend their exhibition to represent contemporary art at large, or do they intend it for an Academicians' Exhibition? In the former case, there is too large a proportion of their own work; in the latter, too large a proportion of outsiders. It is neither one thing nor another. What is really wanted is that a good many Academicians should paint better than they do, or else give up claiming space for exhibiting. The former condition they cannot comply with, and the latter would be too much perhaps for human nature. But we do not think the privileged-hundred idea will work.

A PORTABLE smoke-box and fan for driving smoke for fumigation, testing of drains, &c., produced by Messrs. Baird, Thompson, & Co. under the uncouth *sobriquet* of the "Grahtryx," appears to be an acquisition in the practical application of smoke tests. The portion of the apparatus containing the motor windlass and fan fits inside the smoke-box, and can be taken out and put in the reverse way, the whole then forming a closed box with lid and handles, 17 in. by 8½ in. by 12 in., and such as one man can carry. The propelling of the smoke is done, by the working model we have examined, very efficiently.

THE collection of "Italian, French, and Spanish pictures" at the Goupil Gallery includes, among its best items, two or more works by an English painter, Mr. Fulleylove, which have been seen in London exhibitions before, but are well worth seeing again. Among the pictures which come properly under the description of the exhibition are some brilliant works by Benjamin Constant, and some of the light, hard, but very clever pictures of T. Benlliure. Of these, "Selling Pardons" (41) is perhaps the best, and contains some brilliant painting of architectural detail. The "Spanish Flower Market" (18) is one of those paintings which represent the unreal effect of a brilliant sunlight which yet seems to cast no shadows,—a falsity which is unpleasant to the eye.

WE are glad to learn, from a letter in the *Times* of the 31st ult., that Mr. W. Colnett, the recent proprietor of the old Cock Tavern, immortalised by the Poet Laureate in his "Waterproof's Lyrical Monologue," has had all the old fittings, "including the celebrated chimneypiece, with the carved oak overmantel," and the panelling seats and tables, refitted in a room at 22, Fleet-street; so that the associations of the old room are not dispersed and lost entirely.

WHAT *can* be the meaning of this advertisement in the *Church Times*?

TO the CLERGY, and Others interested in Church Restoration and Rebuilding.—PLANS and advice free of charge, by an experienced and successful Architect. Highest testimonials. Distance no object.—Apply to Messrs. B—— & Co.

We suppress the address. What do Messrs. B—— & Co., or the architect they "keep," expect to get by this? Clergymen are usually pretty wide awake as to the capacities of the architects they employ. Surely in vain the net is spread in the sight of any bird, more particularly of a clerical bird. However, the *Church Times* is not a "trade journal," and that may account for odd things getting into it.

AMONG the various ways proposed of celebrating the Jubilee of our most gracious Sovereign, one of the oddest at first sight is that proposed by Mr. Mark H. Judge at a meeting of the Paddington Vestry on the 25th ult. We may give it in the form of the resolution proposed:—

"That in the opinion of this Committee, the Dust-collecting and other trades, which are carried on in connexion with the Canal basin between Warwick-crescent and Praed-street, besides being a continual menace to the health of the parish, are, during the summer months, a serious danger to the inmates of St. Mary's Hospital, and a source of annoyance to the Great Western Railway Terminus, which is so often visited by Her Majesty the Queen and the Ministers of the Crown; that the Committee, therefore, considers that no better memorial of the Victorian Jubilee could be devised in Paddington than for the vestry to purchase the canal basin and adjacent property in order that this long-standing nuisance may be abolished, and the site suitably utilised for residential and other purposes."

The other proposals, which were all referred to a Special Committee, were,—a Town-hall; a Recreation Ground; a Public Library and Museum; and an "Imperial Institute" (!). These are more showy projects, no doubt, than the dust (or anti-dust) scheme; but it may be doubted whether the latter is not the most useful and beneficent of all. Dust being "matter in the wrong place," if all the matter of every kind that is in the wrong place could be removed during the year, it would indeed be a year of jubilee.

LETTER FROM PARIS.

M. Fouquian, a young architect who in 1883 displayed much activity and taste in the organisation of the Amsterdam Exhibition, has been charged by the Committee for the French Railway Jubilee Exhibition to instal in the Bois de Vincennes, on the lawn Daumesnil, the International Railway Exhibition of which we spoke in our last. Though the City of Paris has given the committee every facility and has liberally granted them a large slice of one of our most frequented promenades as a site, the principle of the Exposition has been unfavourably discussed and has aroused a kind of tacit opposition. Thus, the six great French railway companies, in spite of protestations and of the favourable report of the new Minister of Public Works, persist in refusing to associate themselves with the scheme, which they declare to be contrary to historic truth and against the interests of the Great Exhibition of 1889.

This latter and larger project may be considered to have entered definitely into its active period. On the Champs de Mars the work for the foundation of the piers is being arduously carried on, and it is hoped that the foundations will be entirely finished by the 1st of May. Some figures may give an idea of the extent of the work. The general levelling of the ground and construction of drainage has been estimated at 780,000 francs. The cost of the Palace des Beaux Arts is taken at 6,295,725 francs. The gallery for various exhibitions and the annexes count for 5,900,179 francs, and the machinery pavilion is estimated at 6,496,228 francs.

Various modifications are being introduced in the architectural portion of the constructions. Thus, the principal gallery, by M. Bouvard, will have a monumental entry, surmounted by a dome, opposite to the Trocadéro. The galleries designed by M. Formigé also present each of them a dome; and the machine gallery by M. Dutert, which will terminate externally in semicircles, will present at its two extremities enormous gables, the decorative effect of which will be ungraceful enough.

The Colonies Exhibition will occupy, on the esplanade of the Invalides, a surface of 11,000 mètres. Another space of the same extent will be reserved for the countries of the Protectorate. Lastly, the banks of the Seine will furnish a good position for the annex services of the colonies, where will be picturesquely grouped the multiform and many-coloured products of Eastern and tropical localities, illustrating boats, fishing, habitations, &c. Along the river also, on the Quai d'Orsay, will be installed the large bazaars reserved for agricultural produce and food products.

As to the Eiffel tower, which one must still talk about because so much talk is made about it, its intended position has been again modified by being moved back to the extent of the width of one of the great piers which are to carry it. This unhappy tower was the occasion of a popular disturbance the other day, on the ground that three-fourths of the workmen engaged for it were foreigners. On inquiry, the number of actual foreigners was reduced to seven Belgians; and no one could complain of this, as the construction is really a private enterprise of M. Eiffel's. Nevertheless, there were loud protestations, and a numerous crowd repaired to the Hôtel de Ville to protest and demand work, as in the bad days of the *année terrible*. M. Alphand dissipated the popular wrath by promising new and important works as soon as the weather became milder.

It may be mentioned, in connexion with this subject, that there is talk of organising on the Champ de Mars a section of "Economie sociale ouvrière," showing what has been done in

France since 1789 to improve the position of the artisan, and what is contemplated in the future.

The private exhibitions usual at this time of year have been inaugurated by that of the "Cercle Artistique et Littéraire," in the Rue Volney. It contains important works by a good many artists of repute, and portraiture especially is very honourably represented by MM. Bonnat, Aimé Morot, Henner, and Delaunay. M. Cazin exhibits a landscape of great power and originality; M. Roll's "Taureau au Pâturage" is a magnificent study; and we may mention also the works of MM. Jules Lefebre, Barillot, Carolus Duran, and Courtois. The exhibition of the rival club, the "Mirlitons," will take place shortly.

Special mention may be made of an exhibition of water-colours in the Galerie Georges Petit, the work of a young artist, M. Toché, who gives evidence of remarkable originality and power. The collection contains impressions of Eastern scenes, painted with much truth, and some powerful original compositions, in which allegory and realism are successfully combined. The decorative feeling of the young painter has had the most free play in the work which he has executed at Chénonceaux, the mansion of M. Pelouse,—a commission in which his talents were allowed full scope, and which shows him to be an artist with a future before him.

We referred before to a dispute between M. Marqueste, the sculptor commissioned to complete the statue of Étienne Marcel, and the Messrs. Thiébaut, the well-known founders. The upshot of the affair (in which the artist had the bad taste to invoke the aid of the Parisian press while the committee of experts was still sitting) was that, although the committee decided that the statue had been cast in one piece (which was what the sculptor denied), MM. Thiébaut, by way of putting an end to discussion, requested to cast it again at their own cost. The actual merit of the work is left for the jury of the 1889 Exhibition to determine, as the founders are to keep it as the chief feature of their show-room until that period.

The Municipal Council have recently increased the budget of the Beaux Arts department by 100,000 francs for the undertaking of some new and important work. Independently of the decoration of the *salons* of the Hôtel de Ville, which is to be commenced soon, there is the question of the restoration of the magnificent Gobelins tapestries, the value of which is estimated at two million francs, and which are decaying in a cellar of the Pavillon de Flore. It is thought that the Municipality may purchase, as a museum for these and other objects, the Hôtel de Sens, the former habitation of the Archbishops of Paris, and which is now on sale. All the "Amis des Monuments Parisiens" join in hoping that the Government will thus save from almost certain destruction this ancient and interesting relic of the past.

In speaking last month of the future of the Musée Guimet, we forgot to mention another museum which is to be erected not far from that, on the Avenue de Trocadéro; a museum which the Duchesse de Galiéra has generously given to the city. M. Ginain is the architect entrusted with the work, the cost of which is estimated at about three million francs.

The inauguration of the new Hôtel des Postes is at last announced for next month; so, at least, the Ministry promised the other day to the delegates from the Municipal Government. If this is adhered to, the ugly sheds will, it is to be hoped, be removed from the Place du Carrousel, and there will only remain there, for some time at least, a sufficiently curious metallic construction which is erected really by way of an experiment. This, which is intended to serve the Public Library at Fort de France, is in the form of a square with angle pavilions; the whole construction is of iron, partition walls, landings, tables, &c. The cost is about 100,000 francs.

Among current artistic news may be mentioned first two competitions opened, one for the erection of a monument to Sergeant Bobillot (killed at Tonkin), the other for the construction of a Hôtel de Ville at Vincennes. The first is open to sculptors and architects equally, the latter to architects who satisfy the jury that their designs can be carried out for 450,000 francs. We shall have occasion to refer to this competition again.

A fine statue of Denis Papin is to be erected in the Court of the Conservatoire des Arts et Métiers; the sculptor is M. Aimé Millet. The work will soon have for a pendant the statue of the celebrated chemist Leblanc. During the month the statue of Louis Blanc, by M. Delhomme, will be unveiled on the Place Monge. Lastly, M. Marguet de Vasselot has nearly completed the model for the statue of Henri Martin, the bronze of which is to be erected at St. Quentin, the birth-place of the historian. The same artist is working at a bust in marble of General Boulanger, which the old comrades of the Minister of War wish to present to the École Militaire of St. Cyr.

At the École des Beaux Arts the work of the pupils is in full activity. The architectural section is proceeding to the classification of the sketches for the Achille Leclère competition, the subject of which was "An Establishment for the Exhibition of Horticultural Products." The decision will be made known on the 12th of March. The examination for the Diploma of Architecture has been completed, and it is to be conferred on MM. Devienne and Laffolye, pupils of M. Coquart; M. Leidenfrost, pupil of MM. Ginain and Questel; M. Krafft, pupil of M. Pascal; MM. L. Roy, Conty, and Hardion, pupils of M. Vaudremer; MM. Bonnier and and Handucœur, pupils of MM. Moyaux and André; M. Manahafer, pupil of M. André; M. Brémont, pupil of M. Ginain; MM. Barbary and Majon, pupils of M. Guadet; and M. Étevè, pupil of M. Douillard.

For the Godebœuf competition, for which the subject was "a design for an electric lamp standard," out of sixty-nine designs sent in, the jury presided over by M. Questel has given "premières medailles" to M. Paquier, pupil of M. Guadet; M. Tourmaine, pupil of M. André, and M. Raphal, pupil of M. Raulin; two "secondes medailles" to MM. Weissemberger and Defays, pupils of M. André; and twenty-three honourable mentions.

January has unhappily left us a longer list than usual of mortalities in the artist world. We have lost M. Bartet, the engineer, M. Alphand's right-hand man, and most active assistant in the embellishment of Paris, of whom we have made mention on various occasions. He was an "esprit d'élite," admirably gifted, and with a great faculty for work. He had the charge of the new crematory appliances at Père Lachaise, and had been commissioned to work with M. Alphand on the 1889 Exhibition. He was still young, and it is to be feared he succumbed to the pressure of overwork.

Art has suffered a great loss in the death of Ferdinard Gaillard, one of the modern masters of the burin, who has died when in the maturity of his talent and reputation. He obtained the Prix de Rome in 1856, and received medals in 1867, 1869, 1872, and 1876, since which latter date he has been Chevalier of the Legion of Honour.

Two other artists of great talent are deceased after a long life of work. The celebrated glass-painter, Maréchal of Metz, is dead at the age of eighty-six, at Bar-le-Duc, where he had retired since the war. He received medals at the *Salons* of 1840, '41, '42, and '59, and was officer of the Legion of Honour since the date of the last Exhibition. The *doyen* of French sculptors, Daumas, has also died at the age of eighty-six. He was the oldest and one of the best known pupils of David d'Angers. His first exhibition work was in 1833. He was author of the "Cavalier Romain" statue on the Pont de Jena. He received a decoration in 1868, and medals in the *Salons* of 1843, '45, and '48.

Lastly has disappeared from the world of art Joseph Michel Anne Le Lonfaché, formerly pupil and then assistant of Duban, successively treasurer and then "*censeur*" of the Société Centrale des Architectes, M. Le Lonfaché was also member of the jury of the École des Beaux Arts and Chevalier of the Legion of Honour. He built a number of private houses at Paris, and may be in some degree regarded as the creator of the Parisian house as adapted to the requirements and tastes of modern life. He was eighty-three years old at the time of his death, but had up to the last shown all his usual energy in the work of the Annual Congress of Architects, at which he assiduously attended the meetings, visits, and excursions. M. Questel and M. Hermant pronounced at his funeral some eloquent words in recognition of the merit of their old professional brother, whose death had left such a void in the Société Centrale.

THE TWO DE BRYS.

SOME of our readers who have followed us in our studies of the old masters of the art of decoration will, doubtless, feel some relief when they light upon the heading to this article, in the fact that at last we have come to two artists whose name and whose works are, to a certain extent, known to them. With the exception of two or three of the more famous of the German masters,—Israhel von Meckenen, Aldegrever, and Altdorfer, and possibly, though in a less degree, Béham and Virgil Solis,—in the numerous crowd of artists who lived by designing, there is hardly another, save the De Brys, father and son, over whom the cloud of oblivion does not rest; but that it does, as a fact, envelope them undeservedly we think that we have by this time established conclusively. Some of the work of the De Brys, however, must be familiar to many through the medium of the many illustrated magazines whose editors have dipped slightly, and all too superficially, into the treasure-house of the past for decorative friezes and tail-pieces. Both father and son were very prolific workers in a style, among others, admirably suited for these objects. But even in their case the difficulty of accurately apportioning to each his proper work meets us, and even so astute a student as Nagler has been compelled to give up his task in despair. This difficulty arises in the first place on account of the father and son having the same name, and using almost identical monograms; and in the second place, on account of their having worked a good deal together; so that "I.D.B. *fec.*" now stands for the father, now for the son, and now for both together. Even when we got rid of the father, we are not free from trouble, for another son, John Israel, appears on the scene as the younger John Theodore's assistant. But John Israel De Bry does not appear to have done any original work, and he may be at once dismissed, leaving the two Theodores to be jointly studied.

The father, Theodore, otherwise Derick, which has been Englished into Dirk, De Bry was born at Liege in 1528; he afterwards resided in Frankfort, as a print and book seller, where he died in 1598. As an engraver he modelled himself on Hans Sebald Béham; whether he did more than this, whether he actually copied, worked with, or worked for Béham is a difficult matter to determine. One of his plates of processions seems to us to be a sort of "Homage à Béham," for on the awning of a cart forming part of it is engraved the Little Master's monogram H.S.B. with a coat of arms below it. The impression in the British Museum is printed on satin, as if it had been designed and published to commemorate some special incident in Béham's life. There are a great number of these processions, for the most part 7 in. or 8 in. in length by rather more than 1 in. in height. He seems to have taken the greatest delight in devising them; they are all crowded with admirably-drawn figures, and are all executed with the greatest skill and precision. One series is specially noteworthy; it bears the title "The Procession for the Funeral of Sir Philip Sydney, invented by Thomas Lant, gent., and graven in copper by Derick or Theodore de Brie, in the City of London, 1578, in thirty-four plates." These processions lie outside the scope of our present study; they are interesting, however, to us as being the known work of the elder De Bry, and so furnish us with some clue towards the determination of the authorship of some of the less known decorative work. The engraving of the dolphin friezes is clearly from the same hand; there are four or five of them each containing, but not in consecutive design, five dolphins and children; a sketch of one of these groups is given in fig. 1; the endowment of the dolphin with acanthus fins and tail is especially curious. The child, however, is entirely realistic, and they may be regarded as whimsical fantasies rather than serious efforts at ornament.

But of ornament pure and simple the elder De Bry designed a considerable amount, and we think that there are certain fairly clear signs by which it can be distinguished from the ornament which is known to be by his son; that is to say, if we omit taking any note of the assistance which the son rendered to his father. The execution is as fine and careful as it is in the Processions, and the design is as closely packed on the surface of the object ornamented as are the figures in the crowds. We shall see when we come to the examination of the son's

work an absence of any attempt at compression, the subjects being chosen for the most part to allow of a greater freedom and play for the curves, and almost as a necessary consequence of this, a very much coarser execution. Figs. 2 to 5 are characteristic of the old De Bry's manner, and may be taken as typical of nearly all his work; the style is almost invariably Renaissance, which, if not very original, is at least graceful. The two designs, figs. 2 and 3, probably come from the series "Des pendants de cleffs pour les femmes, propre pour les argentiers"; fig. 4 is one of two isolated designs for bracelets. With regard to fig. 5 we confess to having some hesitation in admitting it to be the work of either of the De Brys. It is, however, classed among his works in the British Museum collections,—a fact which must, of course, carry much weight. The elder De Bry is also known to have designed some "manches de coutiaus aveque les feremens de la gaine (the ironwork of the sheath), de plusieurs sortes, fort profitable pour les argentiers ou aultres artisiens." The work, both in detail and in general execution, almost exactly resembles the knife-handles of Michel Le Blond, more especially the series from which the fig. 8 of our issue of Jan. 15 last is taken, the quaint outlines of both being absolutely identical, though the ornament is different. Le Blond, it will be remembered, was born in Frankfort in 1580, and probably had begun to work there before the elder De Bry died. If therefore the two sets of plates are correctly assigned to their respective authors,—as to which we still have our doubts,—the resemblances are so strong as to indicate a close artistic relationship between the two men, such as the apprenticeship of the young Le Blond to Derick De Bry.

The large circular panel (fig. 6), though it is generally attributed to the father, seems to us clearly to have been the joint production of the two De Brys. The entire execution is as fine as the Processions, and the whole plate was probably engraved by the father. The compactness of the surrounding ornament in its main structure, and the neatness with which its main features split up the surface, suggest that the conception of the design was also the father's. But the subordinate details, the bunches of flowers and fruits, the dogs and the rabbits, the caterpillars and the butterflies, have no counterpart in any of the designs which may without doubt be attributed to the father, but are almost identical with the details which frequently figure in (or rather disfigure) the son's acknowledged work. It appears to us, therefore, that though the father engraved the whole plate, the son was employed to devise the minor details of the ornament which, though they are subordinated to its main structure, go far to mar the beauty of the whole conception. That conception, as we have said, is very charming, and to it may be attributed the popularity of the engraving, which is, perhaps, the best known of all the works of the Frankfort printseller.

Fig. 7.

Passing now to the work of John Theodore De Bry, the son, who was born at Liege in 1561,

Fig. 1.

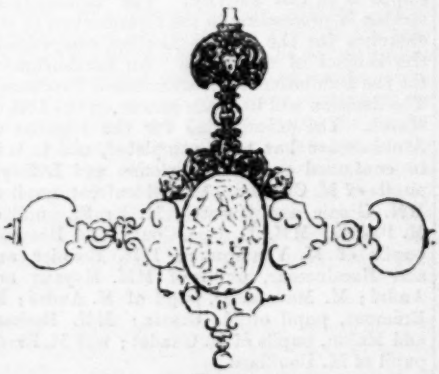


Fig. 3.

Fig. 2.

Fig. 5.

Fig. 4.

Fig. 8.

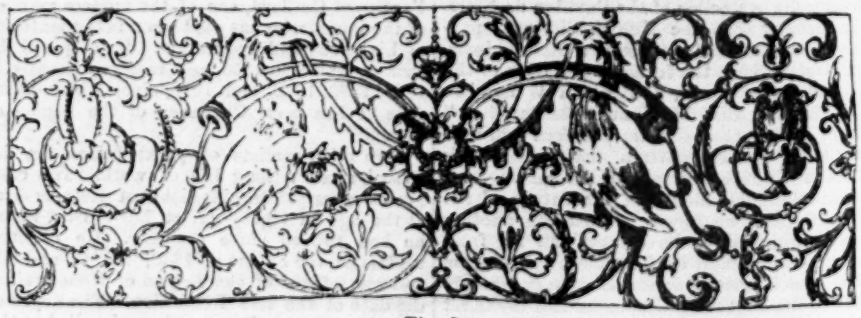


Fig. 9.

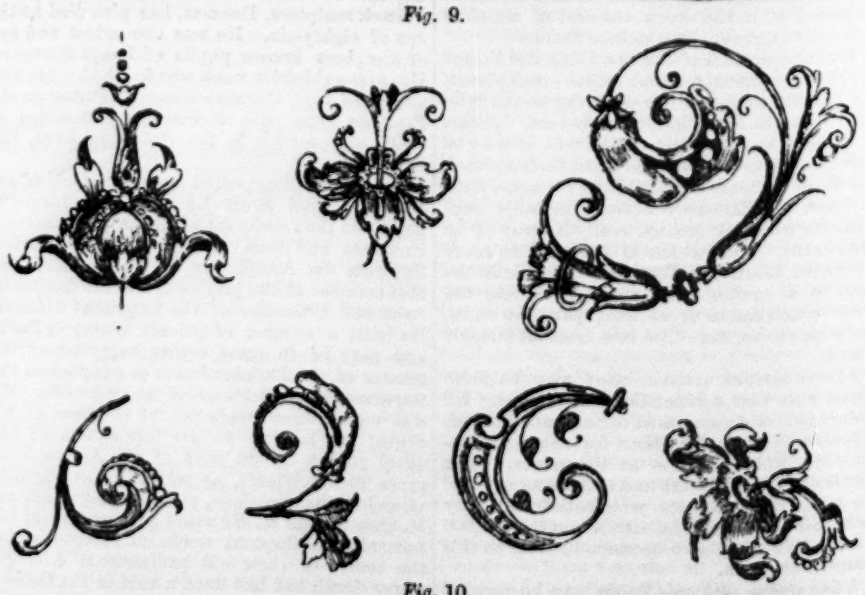


Fig. 10.

we must first notice his "New Artistic Alphabet, ornamented with beautiful figures, the meaning of which adapts itself to the letters, artistically engraved on copper by De Brye, also described by entertaining Latin and German verses." From this alphabet comes the initial letter S (fig. 7): S stands for Solomon, and the verse attached to the letter is as follows (translated into very blank verse):—

> "Solomon, also, the wise man,
> Full of great gifts and good deeds,
> Trusting alone on God;
> He built to his honour a temple.
> Therein was God's name praised,
> And it covered the king with glory,
> For whatever is done for God's honour
> Shall endure everlastingly."

Each letter of the alphabet stands for some person famous in Scripture or history, beginning, as in duty bound, with A for Adam, the chief features in the ornament being supposed to adapt themselves suitably to the character of the person, whose merits or demerits the poet sings in his simple verses; though it must be confessed that the connexion between Solomon in all his glory and the acanthus-tailed angel who forms part of the structure of the letter S is a little difficult to follow: though, of course, she may be a glorified Queen of Sheba. The letters themselves are about eight inches high by five broad, and can only be described as poor in the extreme; very few of them, indeed, have any sign of properly conventionalised ornament; the fragment of acanthus scroll at the bottom of the S, and forming the angel's tail, is almost the only attempt at it. The figures themselves are ill drawn, and the details are badly conceived and promiscuously put together: they are of all sorts and kinds; birds, beasts, and fishes, reptiles and insects, Cupids balancing themselves in all manner of impossible situations, ladies with wings going through a whole series of gymnastic evolutions, men fishing, bunches of flowers hanging about everywhere, varied by bundles of pears, and apples, and gourds (which will at once be recognised as coming from the same hand as the hanging fruits in the ornamental border of the circular panel which we have already criticised in fig. 6); tassels and tortoises, helmets, spears, and armour of all kinds; in one Moses giving the law; in one a man in an impossibly awkward position cutting off poppyheads (presumably Trajan, though somehow or other he has found his way into the letter G); in another a centurion drinking to "love and war," and in yet another a fisherman holding grapes in one hand and catching a mullet with a hook and line in the other, while his naked spouse with less purpose in view even, dangles fruits into space; and everywhere Cupids put in just to fill up odd corners. Mongrel, impossible, contortionate, disproportionate, without a spark or germ of beauty from A to Z, and withal lacking the true humour of a genuine grotesque, this alphabet is still not without its interest, as telling of the simple things which pleased the minds of simple Frankfort folk towards the close of the sixteenth century; and it has a further interest too, for us, illustrating the remarkable progress in the art of decoration, which study can bring about in a man's work. The remarkable step from bad to good which the younger De Bry took, and which our remaining illustrations witness to.

It is not very clear whether the brother John Israel did not assist in the contriving of this remarkable production; he certainly did in another, which, from its title, is doubtless conceived in a similar style,—"Alphabeta et Characteres, jam inde a creato mundo ad nostra usq. tempora," by John Theodore and John Israel De Brie, "fratres Germanos, cives Francofortien."

Figures 8 and 9 are two of a series of friezes probably executed by the younger De Bry at a much later period of his life. We have attributed them to the son on our own authority; no reference to them is made in Nagler's list, unless they are the "Grotis [grotesques] pour orfèvre et aultre artissien" which he attributes to the father. But, as there is no reason to doubt their being the work of a De Bry, so it seems to us there is no possibility of doubt that they are not the work of old Derick. The hand which crowded seven or eight square inches with fifty or sixty carefully-drawn figures, or which filled the little bracelet and "pendants de cleffs" with minute Renaissance designs, could never have forgotten the minuteness of its cunning, nor would it even have voluntarily relinquished it. These friezes, which are about 9 in. by 3 in., came, on the face of them, from another workman; and though they differ from the alphabet as light from darkness, it is not impossible but that they should be examples of the mature powers which in their infancy had only produced work worthy of infants. In these friezes there is but little to criticise adversely; the birds do not obtrude themselves too prominently in fig. 8, and in fig. 9, they form a not illegitimate part of the design, and are treated almost heraldically. If there is a weakness at all, it is in a certain lack of homogeneity in the main structure of the design. Although it is with a certain sense of relief that we miss the great scroll of the acanthus rolling its length along, in at one end of the frieze and out at the other, yet we also notice with a certain sense of pain the absence of any well-defined lines of construction. They are there, it is true, but they are out of proportion with and lost behind the

Fig. 6

foliage and flowers, which are of considerable size, and this gives at first sight a patchy appearance to the whole which is distinctly unpleasant. On closer study, however, we cannot fail to be struck by the beauty of the foliage and floral devices. They are as original and beautiful as those of Israhel von Meckenen, though they only resemble them in the faintest degree. Wherever we look we are met by some form which is entirely new to us, and which has clearly been worked out and elaborated in accordance with the best traditions of decorative art. The conventional form of the seed-pod of a papilionaceous plant strikes us as especially beautiful and original. Nor do we remember coming across it in the work of any other designer before or since. Every one of the series (there are at least ten of them, and possibly more, though they are not all in the British Museum collection) will well repay careful examination. As we did in the case of Von Meckenen, in our issue of the 5th of December, 1885, we have extracted in fig. 10, from the remainder of the series, some specially noticeable forms with which we close our short sketch of these two men, who, if they are not in all things worthy of a place in the first rank of designers, are at least remarkable men, worthy of attention and study at the hands of those who follow the arts in these modern days.

ON GREEK SCULPTURE AS EXPRESSIVE OF THE EMOTIONS.

ROYAL ACADEMY OF ARTS.

Mr. A. S. Murray, of the British Museum, delivered the third and concluding lecture of this series* to the students of the Royal Academy on Monday evening. He said that the history of Greek sculpture in respect of style divided itself into three periods,—an archaic period, in which the tendency was towards technical skill in rendering the human figures with reference to its movements and costume; a second period, when the human figure was conceived and rendered in a large, broad, ideal manner; and a third period, when technical skill, with innumerable new resources, again obtained the ascendancy. If it were needful to define those three stages more strictly, one way of doing so would be to test each of them by its manner of dealing with the expression of the emotions. In the archaic stage the human figure, in its movements and costume, was paramount; its emotions, and the soul within it, were known and recognised, but they were not identified closely with the body; they were chiefly shown as impelling it to this or that action. In the ideal stage a grand effort was made to reconcile, as Hegel said, the inner with the outer life of man,—his emotions and his thoughts with his bodily form. The effect was altogether noble; but obviously the tendency could not rest at the simple reconciliation of soul and body which we found in the works of Pheidias, where emotion was expressed only so far as it was consistent with the highest conceivable type of form. The next stage was to particularise more the several elements of the body and the several elements of the soul resident in it, always, however, developing them both simultaneously, and never incurring the reproach which had been levelled at Christian art,—the reproach of treating the passions and emotions irrespectively of, and often with intentional indifference towards the form or beauty of the human figure in which they were displayed. The present lecture had to do with the last stage, when the Greek sculptors set themselves to particularise the emotions, and to find such types of the human figure as could best be made to express emotion and yet remain beautiful. It was a natural step from Pheidias, with his figures alike ideal in body and soul, yielding to passion or feeling only as such beings might yield. It was a step that led ultimately to the Laokoön group and the sculptures of Pergamon. But it was necessary to go back to the first masters of the school, Skopas and Praxiteles, and see the kind of beginning it made. For us, Skopas was represented by certain sculptures in relief from the Mausoleum, in particular those slabs found at Halicarnassus by Mr. Newton. A comparison of those slabs with the same subject as represented on the friezes of Phigaleia and of the Nike temple at Athens would show that the Mausoleum figures had a marked individuality. They were particularised in their forms; each had its own identity. They were more like living sympathetic beings than any other figures in older art. But the standard of beauty was still rigorously enforced as a necessary accompaniment to the expression of feeling. The lecturer did not claim for those figures a pronounced show of passion or feeling, but he contended that certainly some of them did clearly express emotion, and that their forms were so conceived as to be able to convey emotion and yet remain beautiful. For instance, there were bearded men as well as youths among the Greeks there fighting against Amazons, and it might as well have happened to a bearded man to have been struck down by an Amazon as it had happened on one of these slabs to a youth who still eagerly tried to defend himself. But the emotion which was appropriate to the fine form of the youth would have been disagreeable in an older man; it would have touched us with pain. It was almost an art in itself to find the right type of figure for the emotion which it was desired to express. Skopas himself might not have had any hand in those particular sculptures, but there was one figure from another frieze of the Mausoleum with which it was difficult to dissociate him. It was a figure of a charioteer bending forward in the race. The reason for assigning it to Skopas was that among the few fragments that had as yet been recovered from his sculptures at Tegea, was a head which closely resembled the head of the charioteer referred to, both in style and in type. It was a type of being to whom the eager straining forward in a race was perfectly natural, and not the source of confusion or perturbation. The eyes, which were naturally deep in the sockets, were pressed forward and rounded. The cheek was kept flat, showing the strong line of the jaw and the cheek-bone, as was usual in the expression of anxiety, where the muscles strained forward and produced that somewhat hard look. The throat had become strongly marked through the upward movement of the face, by which movement also the hair had slipped a little down on the ear, the charioteer being too absorbed in the race to notice it. This was made all the more noticeable by the fineness of the ear itself and the precision with which its relation to the cheek was indicated. The lips were parted in eagerness. Belonging to the School of Skopas or of Praxiteles was the statue of Demeter from Knidos. The type of the figure was that of a young mother, "a Greek Madonna," as she had been called, whose sorrows and whose joys were of a saintly character. Her feelings at the untimely loss of her daughter Persephone must not do violence to her physical beauty, and yet they must be expressed. It was thus a question with the sculptor of reconciling her physical beauty with her emotions, keeping both unimpaired. The head was turned sideways a little, as if in some uncertainty as to the direction in which she should look for the coming again of her daughter. The sockets of the eyes, though fairly deep, were relieved of some part of their shadow by the brows being rounded off and not allowed to impend over the eyes. Why the forehead was so unusually high seemed to pass explanation. The eyeballs were rounded and penetrating. The muscles of the face worked forwards towards the profile, as in all cases of sorrow, the effect being that the breadth of the face when seen in front was considerably narrowed, or, in other words, the expressive part of the face was circumscribed within the narrowest possible limits, and thereby intensified. But the cheeks did not lose their softness: they were not flattened at the sides, showing the jaw and cheekbones. That had been achieved by taking as a model one of those typical women who carried much of the aspect of ripe maidenhood on into a fairly advanced matronship, who, in fact, reminded us of Madonnas, and who combined both the spiritual and the sensual life. The mouth would be too small for a figure of the older ideal order of Pheidias, though it suited perfectly the type of figure under consideration. The lecturer next referred to the head of the statue of Hermes by Praxiteles, found at Olympia and still remaining there. The statue was of marble, and represented the god holding on his left arm a younger brother, the infant god Dionysos. Hermes was looking down and answering the infant's look of childish curiosity with a smile of kindness. The corners of the mouth were drawn back as if he were restraining the smile from becoming a laugh, confirmation of this being afforded by the lips being parted, though the teeth were shown to be closed. The smile was not enough to broaden the face in front, as happened in the expression of mirth, yet it did sensibly broaden it. The right cheek was pushed back distinctly, and the effect was heightened by the otherwise strong and firm line of the jaw being interrupted through the lowering or bending forward of the head, an action induced by the feeling of kindness and tenderness, and one which contributed to the expression of an emotion. The eyes were turned inwards a little, as in looking with curiosity at a near object. The pupils, instead of standing vertically to the face, sloped forward in the upper part. That might not be possible in nature, but it was not uncommon in Greek sculpture where a face was looking downwards. In the present instance, the object of the sculptor was to express the full and kindly gaze of Hermes. It appeared to the lecturer that that position of the eye, filling up the socket more than was usual, and destroying the mass of shadow that would otherwise be there, helped materially to brighten the face, and to contribute to the expression of tender regard on the part of a strong man for a weak child. In the Farnese Hermes the same type of face was to be seen, but worked into an expression of actual pain or anguish, under the later influence of Rome, when for a time it seemed as if art, in its pursuit of sentiment and emotion, would abandon that old and true principle which insisted on a special type of physical beauty for special types of emotion. Having spoken of the statues of satyrs by Praxiteles, and of his statue of Eros, the lecturer said that an effective example of the expression of grief by sculpture was to be seen in a marble figure, of life size, found a few years ago not far from Athens. It had been a monument above a tomb, and represented a female figure seated in an attitude of grief, her head resting on her right hand, the elbow on the thigh, the left hand lying helplessly in her lap, and the feet crossed. That statue had been assigned to the age of Skopas and Praxiteles, but it must have been at the beginning of their age that it was sculptured, if not even a little further back towards Pheidias. The forms were of a larger mould than had usually been associated with Skopas and Praxiteles, and there was a roughness and want of finish about the work which was unusual in their time. The figure was not penetrated with vitality, as were those on the Mausoleum frieze. She was not a personification of grief in general, but of grief as it affected a particular class of womanhood which she in her person placed before us. The sculptor appeared to have carefully avoided any very strong expression, such as would have driven us to think of some particular person and her sorrows. In Athens might be seen hundreds of funeral monuments sculptured with figures in relief, which were intended to soothe the survivors by appearing to share in their sadness and sorrow. As a rule there was no approach to violent emotion in those reliefs. Of the expression of such emotions as rage, the lecturer did not remember any noticeable instances in Greek sculpture, though there were several striking examples on the painted vases. While between the time of Praxiteles and the Laokoön group there had been growing up a desire on the part of sculptors of expressing strong emotion in the faces of their figures, that desire was accompanied by a considerable disregard of the principle which in the good times had insisted on powerful emotions being confined, as far as possible, to beings of a lower nature placed in subordinate positions in the design. The rule seemed to have been that a figure, ugly or repulsive in its forms or expression, was not itself a fit subject for the higher arts. But in approaching the period of the Laokoön group, not only did strong emotions find expression in the faces of exalted persons, such as deities and heroes, but there was a large accession to the list of beings of a lower nature in whom the expression of violence of feeling or of passion was regarded as appropriate. The well-known figure in Rome of a dying gladiator, a Gaul in the very act of dying from a deep wound in his side, was a case in point. Anguish was expressed in every feature, and pain in all his limbs. Again, the Amendola sarcophagus, as it was called, was a very mine of sorrowful expression, with its series of reliefs representing com-

* For reports of the first and second lectures see last week's *Builder*, p. 175.

bats between Roman soldiers and Gauls. Among the figures of the Gauls, but only among them, the pain of mortal wounds, the fury of deadly combat, and despair at the sight of a descending blow from which there was no escape, were forcibly rendered; while among the women of the Gaulish camp it would seem that every attitude capable of expressing dismay, sorrow, and grief had been brought into use by the sculptor. The lecturer next proceeded to refer to the Laokoön group, an objectionable element in which, as it seemed to him, was that the punishment was being inflicted by hateful and loathsome creatures against whom there was no credit in struggling, if, indeed, there was any time given to struggle. Be that as it might, the three sculptors who combined their talents on the marble group conceived Laokoön as making a last effort of physical strength accompanied by an expression of the deepest pain and agony. The central figure was that of a priest of noble birth and of a fine form, yet with an expression on his face that could not be regarded as other than ugly and repulsive. Such a combination of beauty of bodily form with repulsiveness on the face seemed to the lecturer to be a mistake. No doubt the face was one which in time of repose would look equally noble with the bodily forms, but even that consideration did not remove the objection to it. The lecturer said he could only see one explanation of it, and that was that the group had been sculptured under the influence of what was called the Pergamon school, which revelled in representing battles of gods against giants having legs formed of serpents, or battles between Greeks and Gauls. A great many of these Pergamon sculptures were now in Berlin, where they constituted a long series of figures in pretty high relief and on a colossal scale of proportions. They were much admired in Germany, where force and rude vigour are more admired in art than need be. But admiration of the Pergamon sculptures was not at all confined to Germany. They appealed to every one who cared for a skilful handling of the human form with a sound knowledge of it in detail, and with a strong appreciation of its beauty. These sculptures showed invention, also, in abundance, but that was the point where they seemed to go wrong. The invention was not of a good kind. A recent writer in Germany had laid it down that the business of an artist was to represent scenes and objects which the imagination of ordinary people was unable to recall or reproduce. That, said the lecturer, seemed to be a good description of an equally ordinary artist. One could understand the admiration of that writer for the sculptures of Pergamon, because, with their excellent qualities they combined a very ordinary faculty of invention. Nevertheless, it was a fertile faculty, and supplied us with much to look at. Side-by-side with the love of seeing strong emotions expressed in beings of a lower order there grew up also in later sculpture a love for the expression of the gentler feelings which distinguished persons of finer natures. Groups representing such sweet brotherly affection as existed between Orestes and Pylades, or Orestes and Elektra; or motherly tenderness, as between Merope and her son, — these were the subjects which Pasiteles and his followers delighted in for three successive generations. That was the last phase of Greek sculpture proper, and it was gratifying to observe that in it the old rule had re-asserted itself,—that whatever feelings were to be expressed, a special type of physical beauty must be found to convey them. No doubt the range of feelings expressed in the works of Pasiteles and his school was very limited. It included for the most part only such as could be reconciled with, and were most natural to, youthful forms advancing towards manhood and womanhood. In general that was the age of sentiment, and among persons of that age it was often difficult to say whether it was the sentiment they expressed or their physical beauty which ennobled them the most, so completely were those qualities reconciled in them. Pasiteles was a sculptor of many accomplishments, and he was a close student of the works of the old Greek masters in his art. Old records bore testimony to the carefulness and elaborateness of his preliminary studies, and to his having modelled directly from nature. That testimony was confirmed by such works as were known to have been executed by his school; unfortunately, we had nothing from his own hand. The sculptures of his school derived their pose and structure in the main from an archaic Greek type. But the sentiment which pervaded them, the sensitiveness of skin and flesh, the delight evinced in observing the minuter formations of bone, as at the knees and feet, the softening down of outlines where they were apt to be harsh in nature, and the general placidity of forms which accompanied the severe and almost rigid structure of the limbs,—these characteristics were at variance with the sculpture of archaic Greece as we generally understood it, and we might credit their introduction into sculpture by Pasiteles and his school. In his concluding remarks, Mr. Murray said he had been anxious not to appear as a special pleader for the expression of emotion in Greek sculpture, because, though that had been the subject treated of in these lectures, it would have been equally allowable to have declared, in the manner of the famous chapter on snakes in Iceland, that there was no such thing as expression in the sculpture of the Greeks. The facts, however, did not justify such a view; what they did justify him in doing was to admit that there had always been a certain measure of constraint in the expression of the emotions by the Greek sculptors, but at the same time to claim that notwithstanding that, the desire of such expression was always present as a guiding factor in their conceptions.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fifth ordinary meeting of this Institute for the present session was held on Monday last, Mr. Thomas Worthington (Vice-President) in the chair.

Obituary.

The Secretary (Mr. W. H. White) announced the decease of Mr. R. C. Hussey, formerly a Vice-President, and who had retired a short time ago from the membership of the Institute. He added that a memoir of Mr. Hussey, communicated by Mr. Rickman, would appear in the forthcoming Journal of Proceedings. Mr. Thomas M. Rickman was a pupil of Mr. Hussey, who had been a partner with Mr. Rickman's father, the Rickman of the Gothic revival.

Mr. Joseph Jennings said that he had known Mr. Hussey as a young man, and produced two architectural etchings of his executed in 1827 and 1828. Mr. Hussey was the youngest of a clever family, but he was for a long time invalided, which was the reason for his retirement both from the profession and from membership of the Institute.

Mr. J. Macvicar Anderson (Hon. Sec.) announced the receipt of a large number of donations to the library.

The New Street at Charing Cross.

Mr. Macvicar Anderson further said that in connexion with the new street recently formed by the Metropolitan Board of Works from Charing-cross to Tottenham Court-road, a suggestion for its improvement had been made by the standing Art Committee of the Institute, and submitted to the Council and adopted by them. It was intended now to submit it to the Metropolitan Board. Any one who had taken the trouble to examine the street recently formed, especially at the part adjacent to the National Gallery, would see that the line adopted was a peculiarly ugly one, so much so that the marvel was how it had entered into the brain of any one to adopt such a line. It would further be observed that the plot of ground which existed north of Hemming's-row, and on which a public-house now stood, was proposed to be left for a small triangular plot of buildings. The Council intended to ask the Metropolitan Board to be kind enough to hold their hand for a short time in regard to dealing with this plot, until they had considered the suggestion about to be submitted by them. That consisted (1) of amending the line of street which had been adopted, along the eastern frontage of the National Gallery, making an architectural line parallel with what would be, he hoped, the architectural *façade* of the building to the east facing St. Martin's Church; (2) that the triangular plot, instead of being left as a group of unworthy houses standing on the north side of one of our most important national monuments, should be embraced in the site of the National Gallery, so that that building might have not only a southern frontage to Trafalgar-square, but an eastern architectural *façade* opposite St. Martin's Church, and a northern *façade*, finished probably with a circular termination facing the new street. These suggestions the Council thought well worthy of consideration, and they would be sent within the next few days to the Metropolitan Board of Works, accompanied with a strong letter of recommendation.

Jubilee Exhibition at Adelaide.

Mr. Anderson further referred to the Jubilee Exhibition to be held this year in Adelaide. The Fine Art Committee appointed for this Exhibition, and consisting of Sir Frederick Leighton, Sir J. D. Linton, and Sir John Gilbert, proposed to send out a limited number of drawings by leading English architects. They, however, regretted that the allotted space was small, but suggested that, in addition to the drawings, photographs should be sent of buildings executed by living architects. The Council of the Institute hoped that this invitation would be liberally responded to. They proposed to send 100 photographs of representative buildings, and the only condition was that the photographs should be of executed buildings, and not be taken from drawings. The expense of forwarding these photographs to Adelaide would be defrayed by the Institute.

The Liverpool Cathedral Designs.

Mr. J. P. Seddon remarked that next morning most of the Fellows would receive an invitation from Mr. John Scott and himself with regard to the proposed memorial to the Liverpool Competition Committee that they should, before coming to a decision on so important a subject, permit the drawings to be exhibited in London. This was a matter of national importance, and he believed that such a memorial could not but be acceded to. He would, therefore, be glad if the Council thought fit in any way to second the proposition.

Presentation of Medals and Prizes.

Mr. Anderson said that the next business was to present the Godwin Medal for the year 1886, but before that was done he might be permitted to explain that the successful competitor, Mr. W. T. Oldrieve, had carried out the necessary obligations, completing his tour and submitting his report to the Council, who had awarded him the money prize of 40*l*.

Mr. Oldrieve not being able to attend the meeting personally, Mr. Hugh McLachlan received the Medal from the Chairman on his behalf.

Mr. Anderson then said that the Pugin Student for 1886 was Mr. H. D. Walton who undertook to make a tour in parts of Worcestershire and Shropshire, following the lines of railway that pass through Tewkesbury, Hereford, Ludlow, and other places of equal interest; and selecting such examples of domestic architecture as seemed most suitable. Those who had visited the exhibition of Mr. Walton's drawings in the Arbitration-room of the Institute had an opportunity of judging how he had fulfilled his obligations. The Chairman then presented the Pugin Medal to Mr. Walton.

Mr. Henry Thomas Hare then came forward to receive the Ashpitel Prize for 1886. Mr. Anderson explained that this was a prize of books to the value of about 10*l*., awarded by the Council to the candidate who, in the opinion of the Board of Examiners, distinguished himself most in any one of the examinations held during the year. The number of candidates who passed the obligatory examination, in the three held during last year at Leeds and London, was thirty-nine, and Mr. Hare was considered to have excelled beyond all the others.

Mr. Anderson added that before leaving the subject of prizes, it was not altogether inappropriate that Mr. Worthington should preside upon the occasion when a paper was to be read on "Mud Architecture," he having at the age of sixteen or seventeen submitted an essay upon the manufacture of bricks, which gained the Silver Medal of the Institute. In those days there were not so many prizes offered as at the present time, and the credit of gaining one was, therefore, all the greater.

The New Superintending Architect.

Professor Kerr.—I think we ought not to lose the opportunity of saying a complimentary word with regard to the selection of our Fellow and friend, Mr. Thomas Blashill, to a very dis-

tinguished appointment. There were many others amongst the candidates whom we might have cordially congratulated, but the fortune of war has gone in Mr. Blashill's favour. Those of us who know Mr. Blashill, and we almost all know him personally, will all be able to congratulate him on his appointment, and, not only so, but to congratulate the Metropolitan Board of Works upon having appointed him. Mr. Blashill is a sound practical man, and I think we ought to be gratified to give utterance to this feeling, as a testimony of our appreciation of him. We know him as a thoroughly practical man, who has been well trained in business, as a man of genial manners and good-natured conduct, and he has especially distinguished himself recently by promoting those happy excursions into Italy, which I hope will soon make their mark.

Mr. Charles Barry.—It gives me the greatest pleasure to second the proposition of Mr. Kerr. Had he not mentioned it, I intended myself to have suggested it to the meeting, knowing the great cordiality with which it would be received.

Portrait of Mr. Ewan Christian, Past-President.

With reference to the portrait of Mr. Ewan Christian, past-President, Mr. Charles Barry, Treasurer to the Subscription Fund, observed that from want of funds he was not yet able to accept the generous offer of Mr. Ouless, R.A., to paint the portrait for the Institute at considerably under his ordinary charge. He needed about 150*l.* to complete the sum required, and could not doubt that it would be speedily provided by the members of the Institute.

Election of New Members.

The following gentlemen were then, without ballot, admitted as Honorary Corresponding Members, viz.:—The Conte Guiseppe Sacconi, Architect, Member of the Superior Council of Fine Arts, Ministry of Public Instruction, Rome; Signor Michele Ruggiero, Director of Monuments and Excavations for the Kingdom of Italy, Member of the Royal Academy of Naples; and Signor Giovan Battista Filippo Basile, Professor of Architecture at the University of Palermo, Member of the Academy of St. Luke, Rome.

The following members were elected by ballot, viz.:—As *Fellows:* Mr. C. H. Samson, Taunton; Mr. T. H. Sapsford, City Architect, Sydney, New South Wales; Mr. Edward John May (Associate), Hart-street, Bloomsbury; Mr. H. Hall (Associate), Southampton-street, Bloomsbury; Mr. Hugh Stannus (Associate and Ashpitel Prizeman), Larkhall Rise, Clapham; Mr. Thomas William Aldwinckle, East India-avenue, Leadenhall-street; Mr. John Butler, Redcliffe-gardens, South Kensington; and Mr. Fred. Bath (Associate), Salisbury. As *Associates:* Mr. W. A. Gelder, Savile-street, Hull; Mr. A. B. Mitchell (Soane Medallist, 1885), Pembury-road, Clapton; Mr. A. Heyes, Clyde-street, Chelsea; Mr. S. Perks, Wandsworth Common; Mr. G. E. T. Laurence, Ealing Common; and Mr. Henry Thomas Hare (Ashpitel Prizeman), Regent's Park-villas, Gloucester Gate.

The following Hon. Associates were elected by acclamation:—Professor G. Baldwin Brown, M.A., F.S.A. (Scot.), the University of Edinburgh; Mr. Edwin Lawrence, LL.B., B.A., Assoc. Inst. C.E., King's Ride, Ascot; and Major-General Richard Clement Moody, Fairfield, Lyme Regis.

Mud Architecture.

Mr. William Simpson, R.I., F.R.G.S. (Hon. Associate), next read a paper entitled "Mud Architecture: Notes made in Persia and other Countries." We give an abstract of the paper, and some notes of the discussion thereon, on another page.

Messrs. Perry & Co.'s Government Works Unemployed Relief Fund.—The committee of this fund have met weekly for the past ten weeks to distribute the balance of 43*l.* remaining from the fund of last winter. We are informed that they have relieved forty-two most deserving cases, and, the funds getting low, they appealed to the men employed on these works, with the result that 19*l.* 7*s.* 8*d.* was subscribed in a fortnight, with the promise to continue the subscriptions for four weeks longer if necessary.

Illustrations.

"A CLASSICAL CHURCH."

We give this week the design by Mr. F. W. Simon, which obtained this year the Tite prize at the Institute of Architects. The Tite prize was founded, as most of our readers are aware, by the late Sir William Tite, for the encouragement of the study of Italian architecture, at the time when the Italian style was apparently entirely succumbing to the inroads of modern Gothic. Times have changed since then. The author has chosen a square type of plan, with a large central area, as the type specially suited for modern worship, in which we concur with him.

The design is a successful treatment of recognised and orthodox features in the Italian Renaissance style, the introduction of the headed two-light windows, with a dividing shaft, being a reminiscence of the earlier Renaissance manner, which breaks the coldness of the prevalent type of detail very agreeably, but which Sir W. Tite probably would not have approved. From our point of view, on the other hand, it is a pity to see such poor and worn-out features as the festoons and urns reproduced once more. Cannot the aspirants for the Tite Prize exercise themselves in attempting to improve upon and develope the details of the style a little? There is plenty of room for it.

"THE BRAZEN SERPENT."

SCULPTURE.

We give illustrations of the two sketches in clay of this subject, which obtained the first and second prizes respectively, the former being by Mr. W. H. Totterdale Venner, the latter by Mr. George J. Frampton. We commented on the designs at the time of the exhibition of the students' drawings.

MORTUARY BUILDINGS AND FIRE-ENGINE STATION, HORNSEY.

We illustrate this week two sets of buildings, viz., mortuary buildings and fire-brigade station, which have been recently erected by the Hornsey Local Board, and the business-like manner in which they have been designed and carried out speaks well for the care that the Board is taking in providing for the ever-increasing wants of the large and important area under their control, comprising as it does the districts of Hornsey, Highgate, Crouch End, Stroud Green, Fortis Green, and Muswell Hill.

The site of the mortuary is on a short private road, out of the High-street, Hornsey, and in the arrangement of the plan the greatest care has been taken to ensure that the buildings and premises generally shall be isolated, unobtrusive, and, as far as possible, concealed from the public view.

The mortuary buildings are in four distinct blocks, the first comprising coroner's court, witnesses' rooms, and caretaker's rooms; the second, two mortuary chambers, with viewing lobby and shell-store; the third, a *post-mortem* room and laboratory; and the fourth, disinfecting rooms and offices in connexion with same.

The coroner's court is a spacious well-lighted and ventilated room, about 27 ft. by 18 ft., fitted with benches for the jury, and a raised platform for the coroner, and with waiting-room for witnesses adjoining.

The caretaker's rooms comprise two bedrooms, kitchen, and scullery, bath-room, &c.

The mortuary building consists of two chambers, each containing three slate slabs on iron standards, one chamber being reserved for those who have died from infectious diseases.

The chambers are separated by a viewing lobby which has a small window and blind opposite each mortuary slab. From this lobby the jurors, or others interested, can view the bodies without entering the chambers. This lobby is also provided with an exit door, so that the jurors after their inspection may pass along the open passage in rear, and return by the side entrance into the court, as indicated by the arrows on the plan. On the outside of each chamber is a glazed closet or press, in which are hung the clothes of the deceased, as a means of identification.

The walls of the mortuary are lined with white glazed bricks, and all internal angles are formed of hollow bricks, to prevent the accumulation of dust.

The floor is of Granolithic concrete, and the ceiling of iron joists and concrete, finished in Keene's cement.

A small room is provided adjoining the mortuary for an ambulance-shed and shell-store.

The *post-mortem* room and laboratory adjoining are lighted and ventilated from the roof, and lined with white glazed bricks, and contain the usual fittings and appliances.

This building is kept entirely distinct from the others, in compliance with section 143, Public Health Act.

The disinfecting-room contains a Lyon's patent disinfecting apparatus, manufactured by Messrs. Manlove, Alliott, & Fryer, of Nottingham. The infected clothing is brought in a covered van (kept for this sole purpose) into the disinfecting-room, and the infected articles are placed direct into the disinfecting-chamber, which consists of an oval cylinder 5 ft. long, with door at each end, and in which works on runners a galvanised-iron wire cage; the steam-tight doors being closed, steam is injected into the cylinder from a vertical boiler adjoining, at a pressure of 25 lb. to the square inch, and the articles, after remaining a sufficient time in the chamber, are withdrawn through the door at the opposite end of the cylinder into a second room, which is fitted with a copper, and other appliances for washing and cleansing, and from thence are returned to the owners,—a separate van being kept for this purpose.

Adjoining the disinfecting-rooms is a destructor, for destroying all articles which it is necessary so to treat.

The fire-engine station is situate in the Tottenham-lane, Hornsey, and being in a more prominent position than the mortuary, more attention has been given to the external appearance, the stock brick fronts being relieved by red-brick quoins, moulded cornices, and pediments, and terra-cotta enriched string courses.

Accommodation is provided on the ground-floor for two fire-engines, the large doors to engine-rooms opening automatically. On the upper floors are chambers for resident firemen, and in the rear of the main building are stables, and also a large depôt for the scavenging and watering appliances of the Board. At the side of the fire-engine house is a shed for housing the steam-roller. These works have been designed and carried out by Mr. T. de Courcy Meade, A.M.I.C.E., the Surveyor and Engineer to the Board.

The mortuary buildings were erected by Mr. Wm. Tongue, of Plumstead, and the fire-brigade station by Mr. J. W. Dixon, of Highgate.

ELECTION OF A DISTRICT SURVEYOR.

At the meeting of the Metropolitan Board of Works on the 28th ult., the election of a District Surveyor for the District of Charlton, Lee, and Kidbrooke, in the room of the late Mr. James Collis, was proceeded with. There were thirty-eight candidates, but for voting purposes these were reduced to thirty-five, three out of the total number of candidates not being present,* in accordance with the requirements of the Board. The results of the preliminary voting on these thirty-five candidates, to reduce the number to six, were as follow:—Edmeston, J. S., 38 votes; Hardcastle, W. J., 32 votes; Lovegrove, H., 32 votes; Saunders, M. L., 38 votes; Stock, H. W., 37 votes; and Woodthorpe, E., jun., 31 votes. The subsequent voting, which was taken by ballot, was as hereunder:—

	Second Vote.	Third Vote.	Fourth Vote.	Final Vote.
Edmeston	20	25	26	34
Hardcastle	7	4	—	—
Lovegrove	10	11	11	—
Saunders	10	10	14	17
Stock	5	4	—	—
Woodthorpe, E. Jun.	2	—	—	—

Mr. Edmeston was therefore declared to be the successful candidate, and thanked the Board for his election.

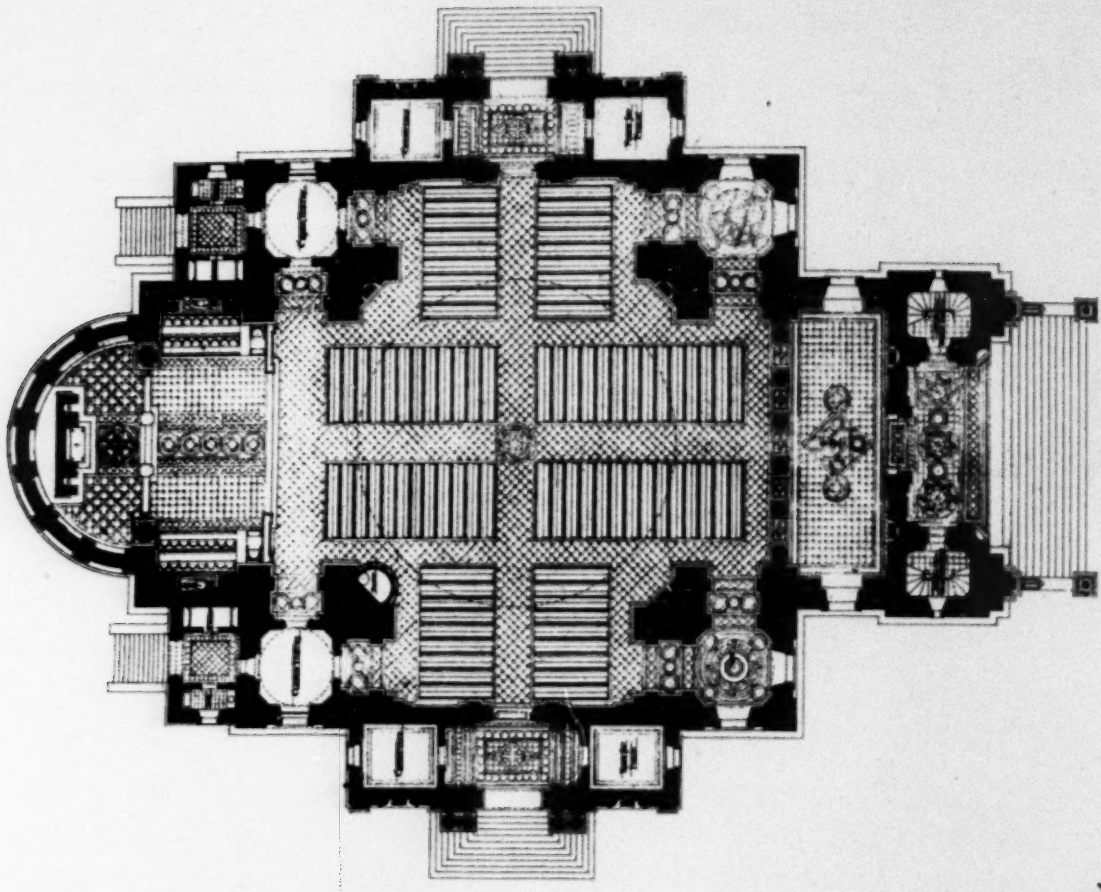
Ingram House, Fenchurch-street.—Mr. N. Maurice, of West Green-road, Tottenham, writes to say that he supplied the stoves, grates, fireplaces, tile-hearths, &c., for this building, as well as the marble columns and pilasters to shops.

* One of the absentees, Mr. W. Hilton Nash, wishes us to state that he was unavoidably absent.

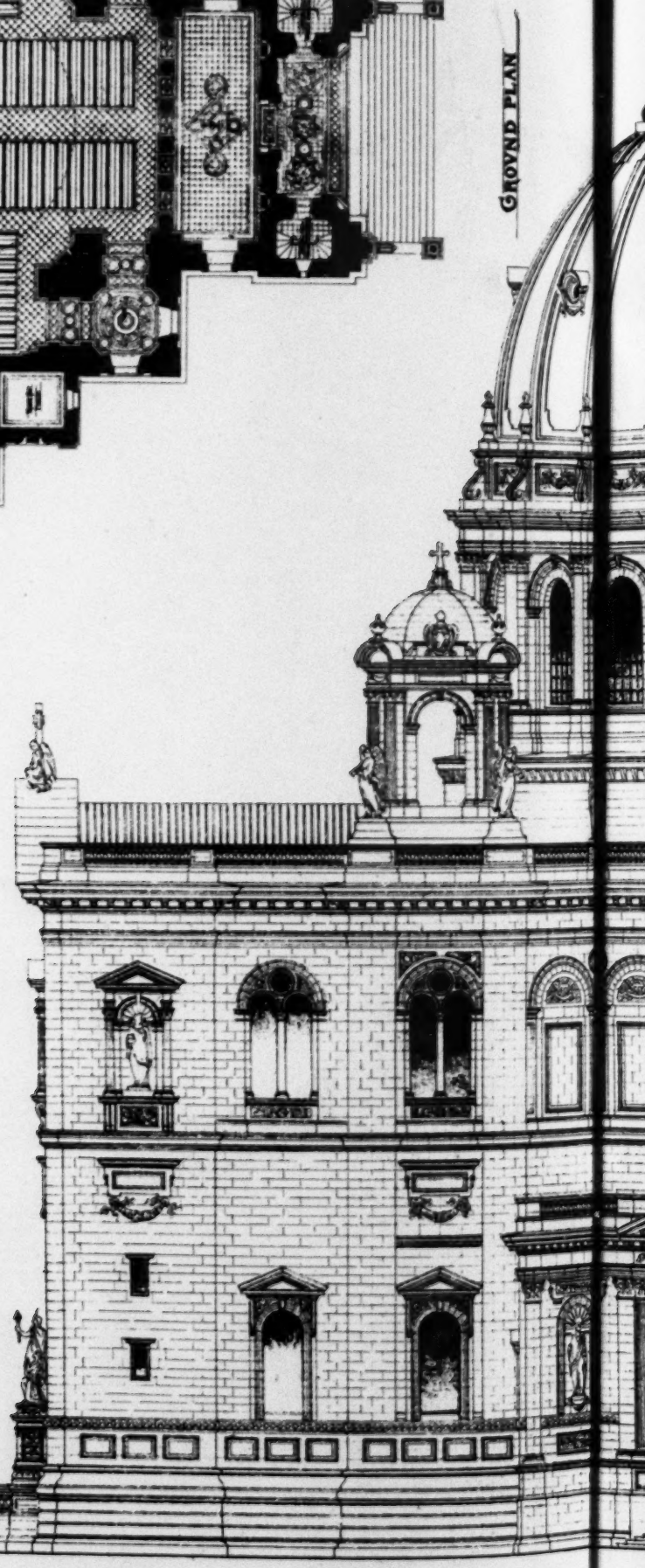
INK PHOTO. SPRAGUE & Cº 45, MARTINS LANE, CANNON ST. LONDON E.C.

"THE BRAZEN SERPENT.": Sketch by Mr. W. H. Totterdale Venner.

Awarded First Prize, Royal Academy, 1886.



GROUND PLAN



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AWARDED THE TITE PRIZE R.I.B.A. 1887.

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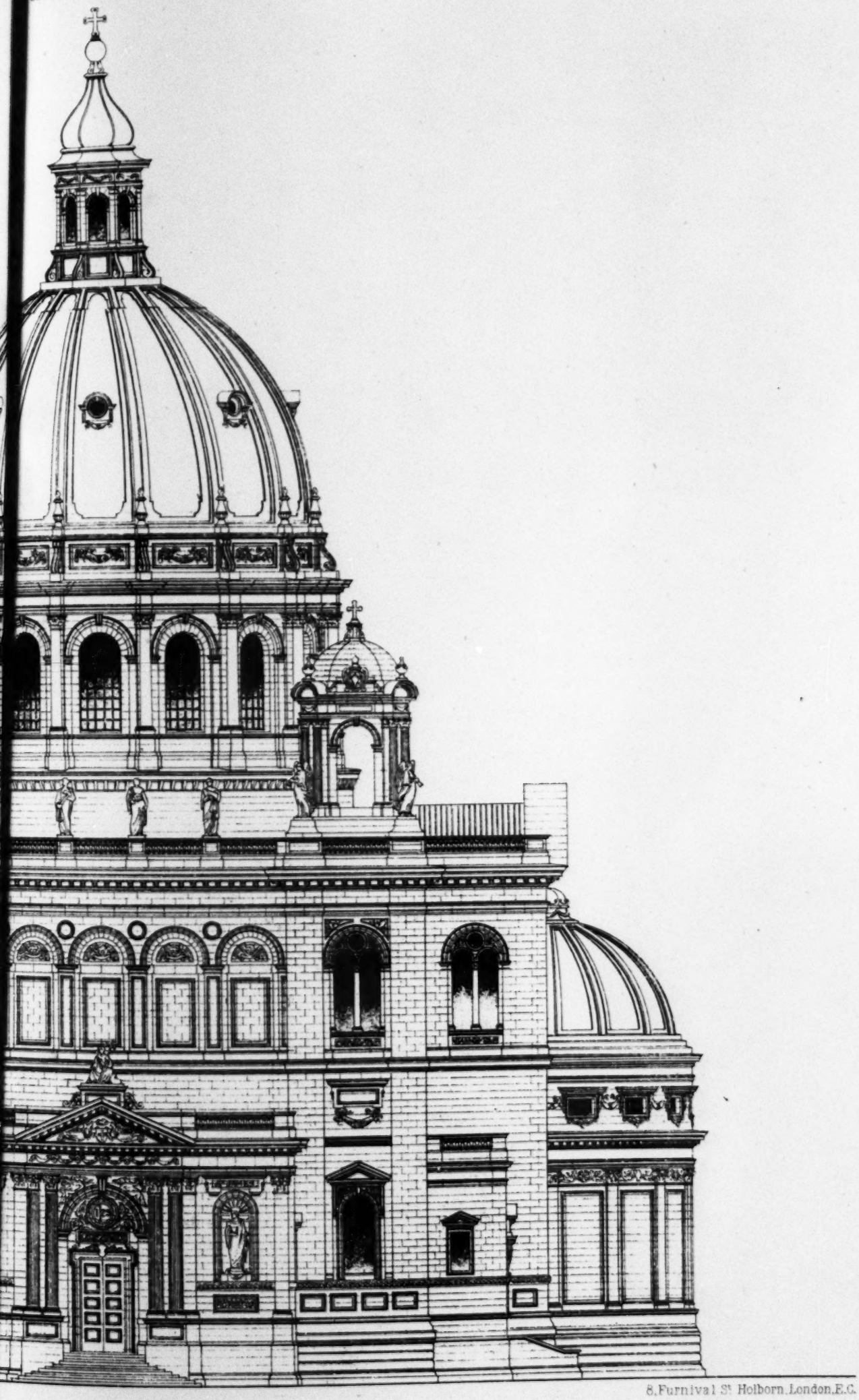
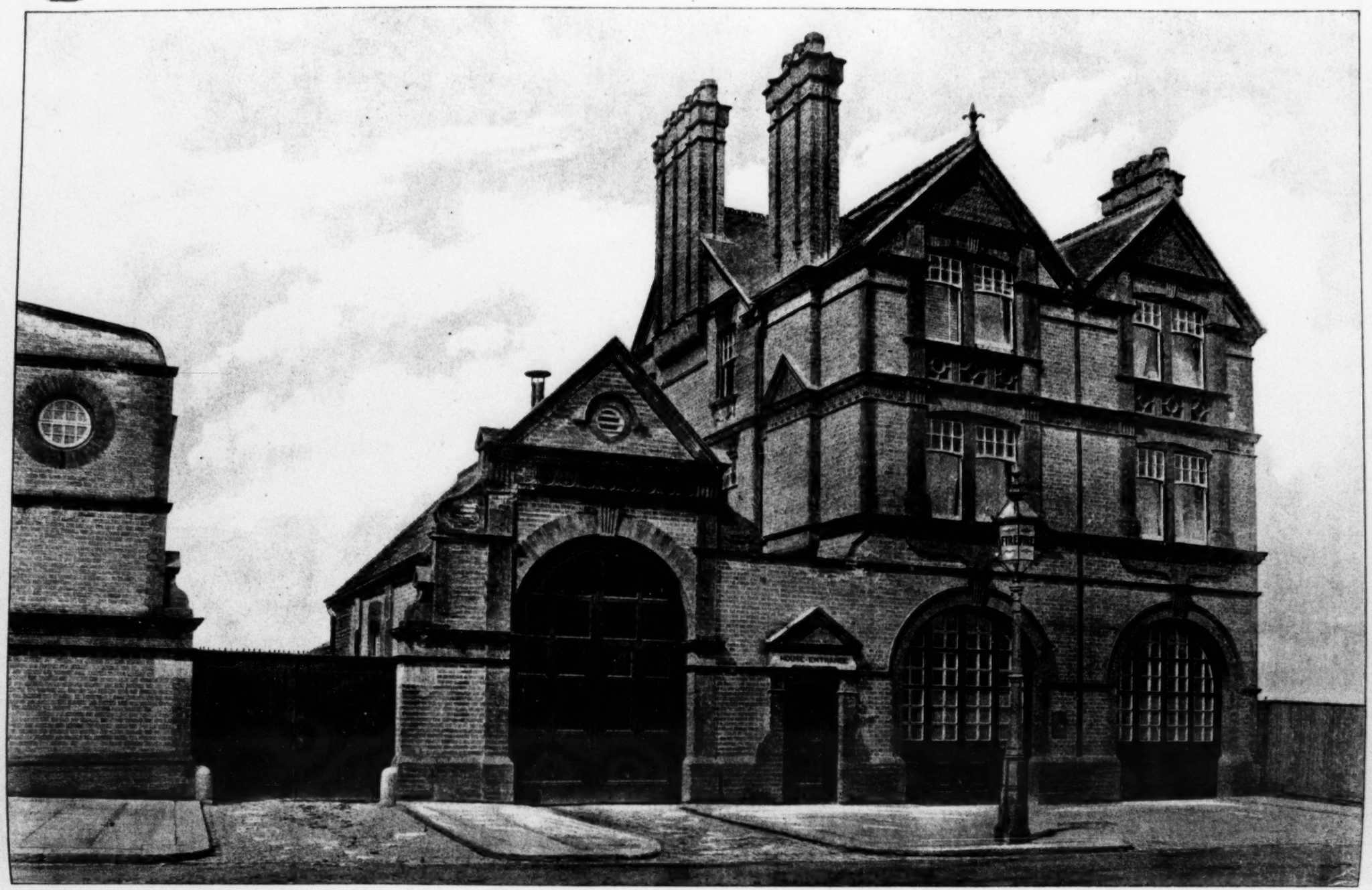


8, Furnival St. Holborn, London, E.C.

SOUTH ELEVATION

HURCH."—DESIGN BY MR. FRANK W. SIMON.



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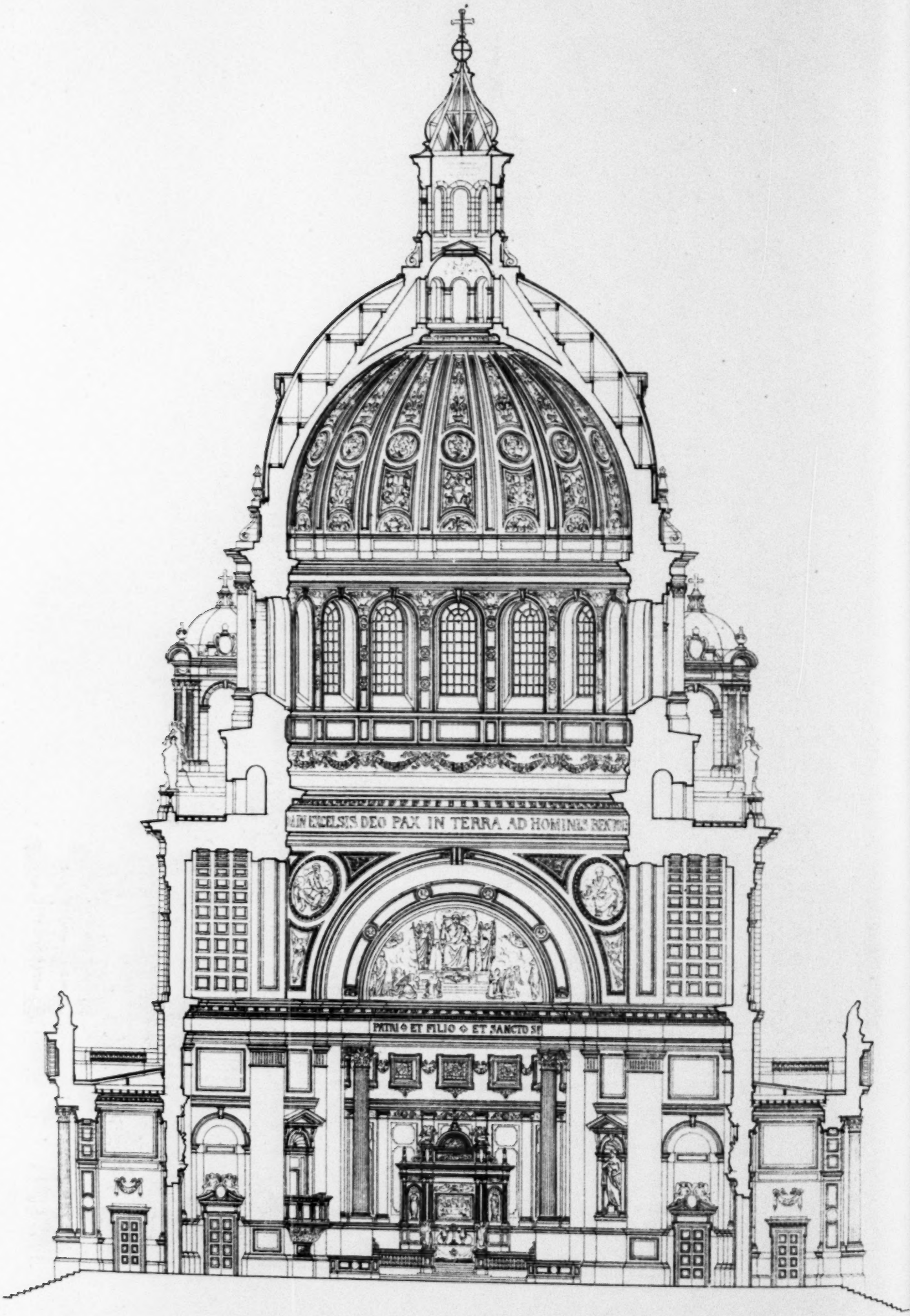
FIRE STATION, TOTTENHAM LANE.—Mr. T. De Courcy Meade, A.M.I.C.E., Engineer and Surveyor.

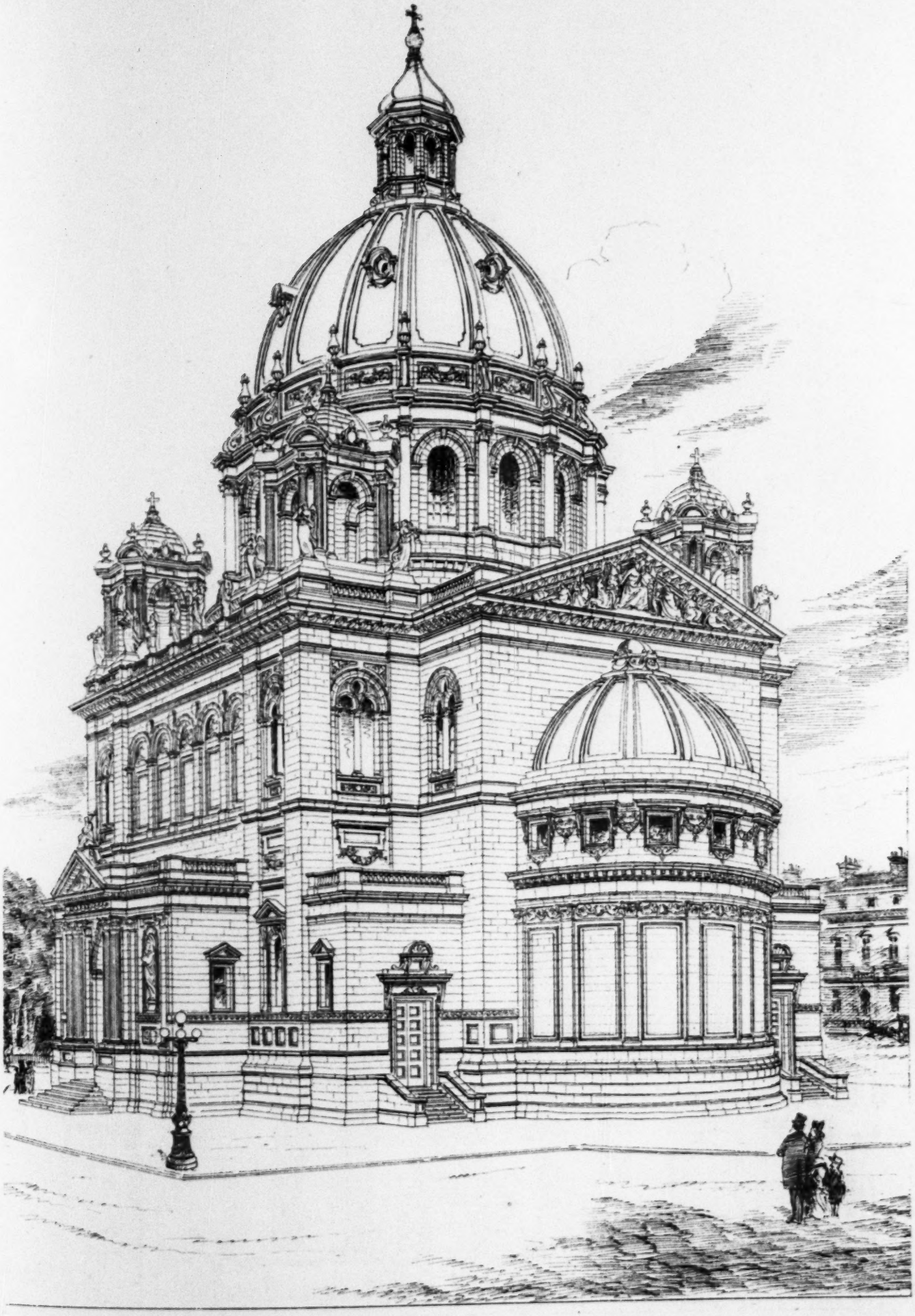


SECTION

"A CLASSICAL CHURCH."—DESIGN BY MR. FRANK W. SIMON.

AWARDED THE TITE PRIZE R.I.B.A. 1887

C.F. Kell Photo-Lith & Printer, 6 Furnival St. Holborn, London E.C.



PERSPECTIVE VIEW.

"A CLASSICAL CHURCH."—DESIGN BY MR. FRANK W. SIMON.

AWARDED THE TITE PRIZE R.I.B.A. 1887

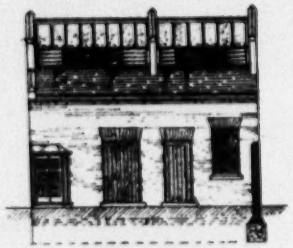
G.F. Bell Photo-Lith. & Printer, 6 Furnival St. Holborn, London, E.C.

MORTUARY BUILDINGS FOR THE HORNSEY LOCAL BOARD

THOS. COURCY MEADE AMICE
SURVEYOR.

ELEVATION OF CORONER'S COURT

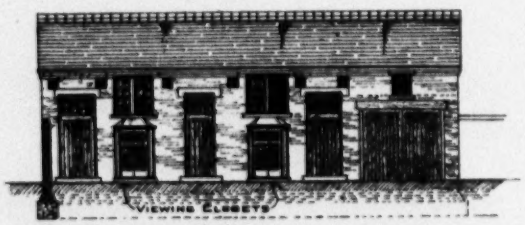
SECTION THRO' VIEWING LOBBY.



ELEVATION

SECTION

POSTMORTEM ROOM



ELEVATION OF MORTUARY

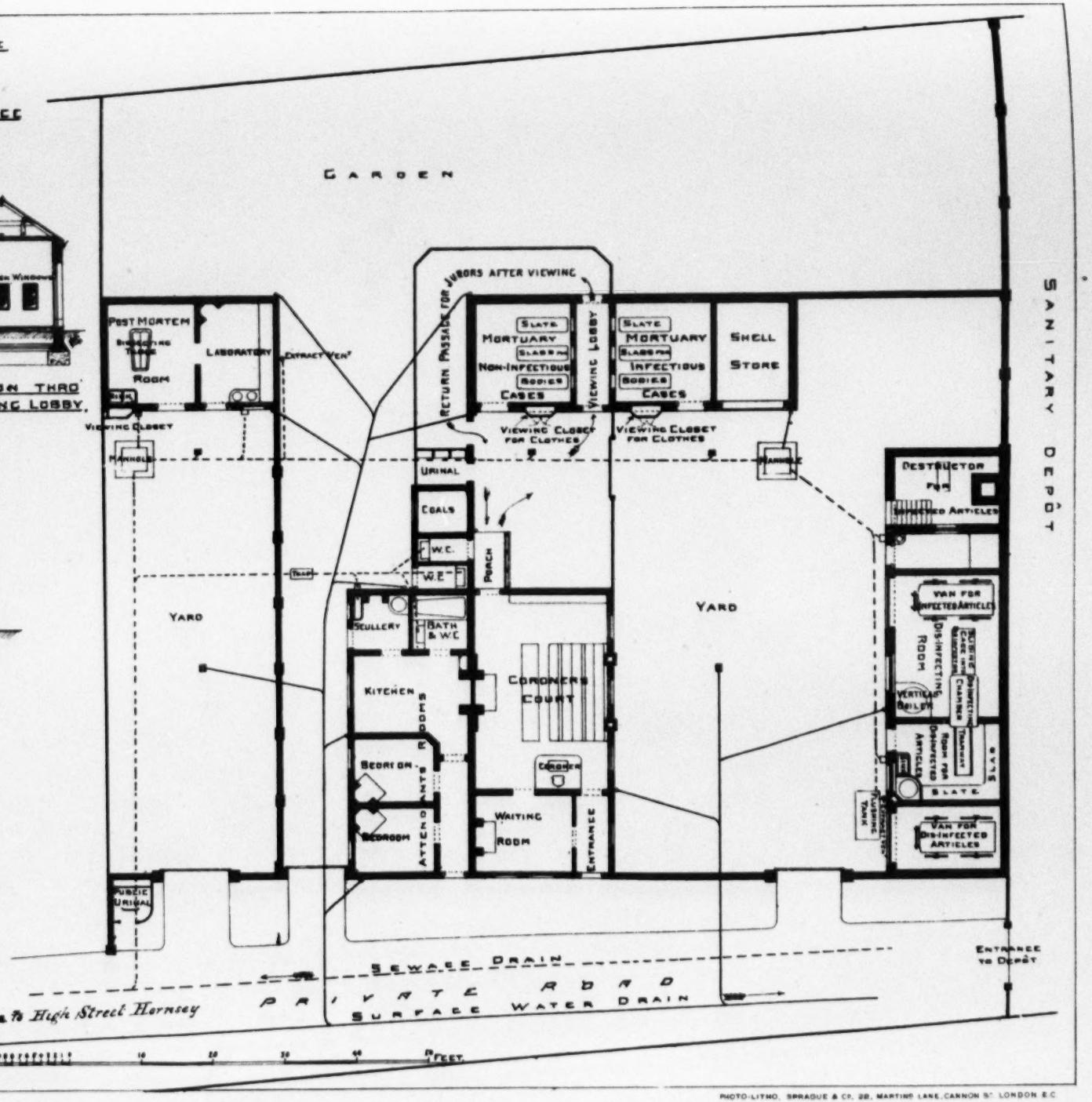
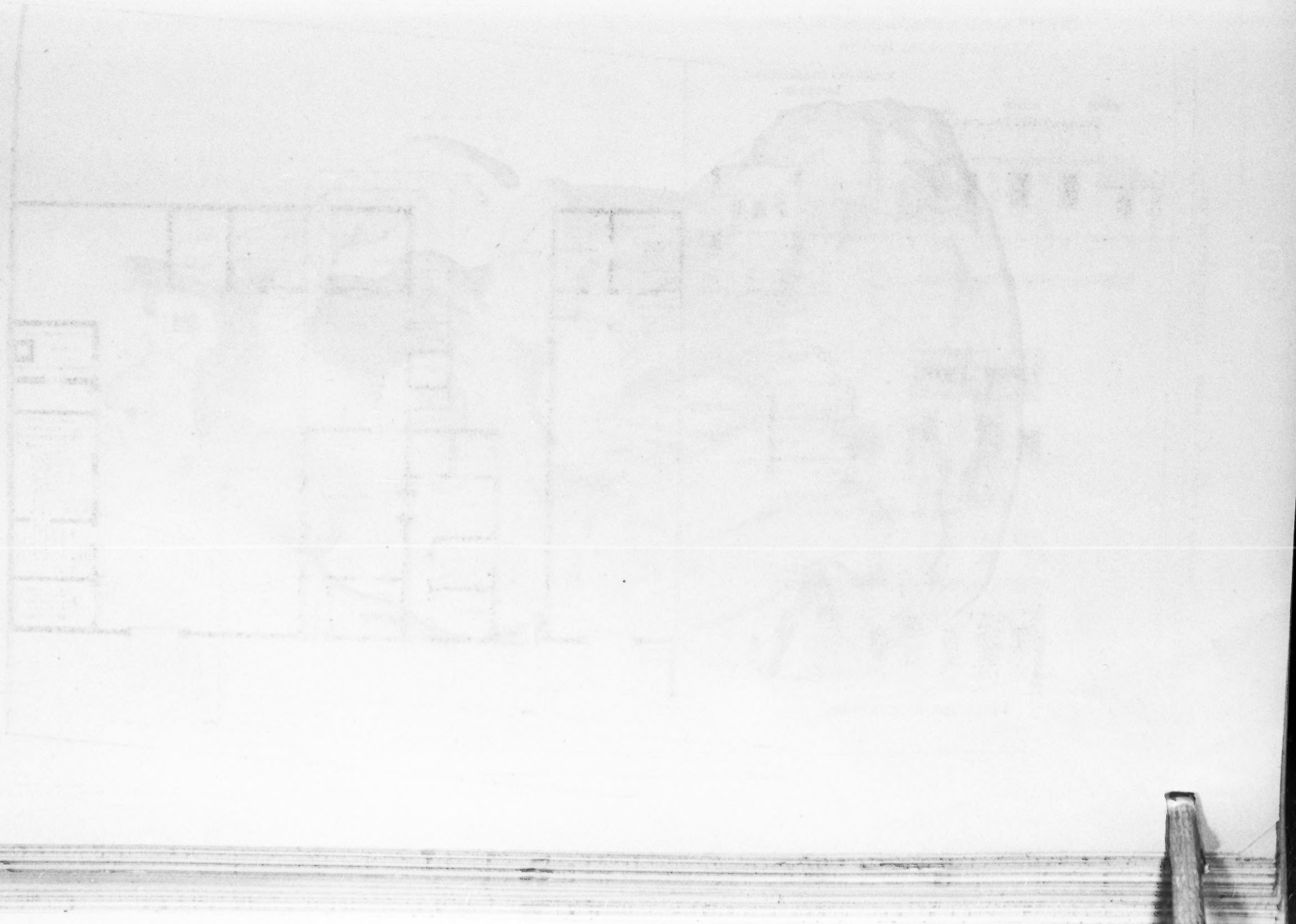


PHOTO-LITHO. SPRAGUE & Co. 28. MARTINS LANE, CANNON ST. LONDON. E.C.



"THE BRAZEN SERPENT.": Sketch by Mr. George J. Frampton.

Awarded Second Prize, Royal Academy, 1886.

MUD ARCHITECTURE IN PERSIA AND OTHER COUNTRIES.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the meeting of the Royal Institute of British Architects on Monday evening last, Mr. William Simpson, F.R.G.S., of the *Illustrated London News*, read a paper on "Mud Architecture," being notes made in Persia and other countries.

The author explained that his paper treated of mud when used directly in building, as well as when formed into bricks and dried in the sun. His information was collected in the winter of 1884–85, when he was attached as a special artist to the Afghan Boundary Commission. Starting from Resht, on the Caspian, he travelled to Sarrakhs and Kuhsan by way of Persia. The winter was spent at Bala Murghab, and the return journey was made *viâ* Meshed, Shahrud, Astrabad, and Keneri Gez, on the Caspian. Throughout the whole of this district mud is, to this day, the principal material used in building; buildings of burned brick are rare, and the ruins of such still more so. Where old towns or cities stood, all that now remain are mounds. In Persia he came across one or two examples of mud architecture, which served to show to what perfection the process might be carried, and the use that was made of glazed pottery in embellishing this class of building.

Pursuing his journey eastward, about 100 miles from the Persian capital Tehran, Lasgird was reached. Here is a very remarkable specimen of mud building, in the form of a village erected on a circular mound of mud raised some 30 ft. above the surrounding level. There is but one entrance to this block of buildings, capable of admitting only one person at a time. This village is probably the remains of the stronghold of a town, and the object of this peculiar mode of construction is to provide a refuge inaccessible to the Turkoman horsemen, the ruthless raiders of Central Asia, and the Eastern frontiers of Persia. As they were unable to besiege a place, rapidity of movement was necessary to the success of a swoop upon a village, and the chief object of the inhabitants was to put themselves as rapidly as possible into a safe retreat.

Near Mazinan are the remains of two towns now deserted and in ruins. One of these, he stated, was similar to that at Lasgird, but only 20 ft. in height, and had now become a quarry, from which mud was extracted for other buildings. Here he found a small room, 15 ft. by 10 ft., which was a great surprise to him, and which showed what it was possible to do with this material. The walls were perfectly square, and at right angles, and had been finished off with a layer of *gutch* or gypsum, which had been run into delicate mouldings and stamped, whilst wet, with a raised pattern.

Two miles south of Nishapur, a large town of mud houses, and mud walls, he found a large square mound, and traces of the mud walls of an ancient town. At Meshed, the capital of Khorassan, is the tomb of Iman Reza, the eighth Iman, who died in 818 A.D. This is inaccessible to any but the faithful, but the author obtained a good view from a neighbouring house. The dome over the tomb and the tips of the minarets are of copper thickly gilt, and the interior was described to him as being richly decorated with gold, silver, alabaster, marble, precious stones, and beautiful tiles. On the road from Meshed to Sarrakhs he passed through a desolate country where are the remains of mud villages and walls in various stages of ruin. At Sarrakhs, the Persian town or New Sarrakhs, built as a fort for the accommodation of troops, the walls and houses are entirely of mud. At Old Sarrakhs, on the right hand of the river Tejend, though no doubt a very ancient, and probably in former times a large, place, he found only a square mound, each side of which was about 300 ft. The top of the mound was covered with fire-burned bricks, the remains of substantial buildings. About a mile to the north-west of New Sarrakhs are the remains of a burned-brick tomb, decorated with beautiful plaster ornament,—which seemed satisfactory evidence that similar results had been obtained in the plaster ornamentation of mud buildings, in which it was known that plaster had been employed for finishing. From Sarrakhs to Kuhsan, a distance of 140 miles, the country once fertile and populous is a desert, in which are slight traces of the ancient water-courses. From Kuhsan, the author crossed over the ancient Badghiz to the Khushk Valley, in the centre of which is a large mound with ruined towers of burned brick on its summit, and ruins of mud walls at its base. So recently as 100 years ago this valley was well peopled. At Kara Tappah Kurd, and Kala-i-Maur, he found mounds, apparently square on plan, and on the latter the remains of a burned-brick fort.

Near the junction of the Khushk and the Murghab rivers stands Ak Tappah, or the "White Mound," by far the largest mound seen by the author. Roughly speaking, it is triangular in form, the longest dimension being about 300 yards, the greatest width 100 yards, with a total height of about 100 ft. With the exception of a modern mud parapet, this was found to be a bare hill. On both banks of the river for a considerable distance south of Ak Tappah he found a succession of mounds, many of them probably of great age, indicating where prosperous towns have stood in this once fruitful valley. The whole distance of about twenty miles from Penjdeh to Meruchak is covered with similar ruins. Among nearly all the mounds examined, the author found innumerable fragments of pottery, the remains of the beautiful glazed tiles with which it was no doubt customary to decorate the most important mud buildings, such as mosques, tombs, &c.

He managed to pick up a few details of the manner of construction of mud buildings in Persia and India. In good houses, the foundations, often 3 ft. or 4 ft. deep, are formed of rough uncut stones or burned bricks. Walls are from 2 ft. to 4 ft. in thickness,—thickness of wall ensuring coolness in the house. The mud is built in layers, 2 ft. or 3 ft. in depth, it being necessary to allow one layer to dry before another is put on. The upper parts of the walls are sometimes formed of sun-dried bricks, and are occasionally built "hollow." A mixture of mud and chopped straw, called *kahgill*, is applied as a coating on the outside of walls to preserve them from the weather. In Indian villages the mud houses stand on a *chabootra*, or raised platform, which is washed at regular intervals with a mixture of mud and cow-dung. In India flat roofs covered with mud are common; but in Persia, wherever wood is scarce, the roof is carried on arches or domes of mud bricks, laid in *gutch* or gypsum.

The author's interest in the mud buildings of Persia arose from their similarity to the Afghan villages with which he had become familiar in 1878–79. An Afghan village is surrounded by four walls with a tower at each corner, and an entrance gate at one side; and he found the same arrangement and mode of construction to exist on the whole route followed by him from the Caspian to near the banks of the Indus. He considered that this similarity found in methods of building, although in such a primitive material as mud, should give greater confidence to those interested in tracing a connexion between the arts of Persia and those of India. He noticed on the Heri Rud, and at other places near, some rock-cut caves, which he believes to be clear evidence of the spread of Buddhism from India towards Central Asia, and possibly further westwards. The mud crenellated walls, with towers at the corners, and occasionally at intervening points, seen by the author in Central Asia in ruins, and in course of construction at the present moment in Persia, are the exact counterpart of the walls shown on the Assyrian sculptures in the British Museum, which it is known were built of mud. Such walls have existed in Mesopotamia for thousands of years, and the identification includes a long period of time and covers a large geographical space.

His examination of these mud buildings has led the author to think that the idea of the arch, for the invention of which the Romans have been credited, is all but co-eval with mud building, and that its invention, as is shown by Egyptian remains, is lost in the past. The dado also, he considered, was only a direct evolution from the simple mud wall of primitive times, which required protection along its base. Our investigations into the origin of architectural forms have, he stated, up to now been almost exclusively confined to early wooden construction, to the exclusion of the more primitive method of building in mud. The oldest civilisations that we know of were in Egypt and Mesopotamia,—two countries where mud building has existed from the earliest times, and is the mode of building still employed. The author had himself sketched the mud houses discovered by Dr. Schliemann at Hissarlik in Greece, and quoted Miss Yule's description of the present method of building "cob" walls in Attica.

As far back as the year 385 B.C., the year in which Agesipolis took Mantinea, mud walls were used for defensive purposes, and were usually found more effective than walls of stone. The author thought that translators of Greek works had used the word "brick" when "crude brick" would have been a more faithful rendering; hence the extent to which mud was used by the ancient Greeks has not been quite understood. The late explorations at Olympia revealed at one spot some data upon which a theory has been based, which, if correct, will add much to the importance of mud in relation to architecture in the past. The discovery has led to the suggestion that the cella walls of temples were sometimes built of sun-dried bricks, a suggestion on which the author did not venture to pronounce a judgment of his own.

In many parts of the world "wattle-and-dab," is to be found, and the author was indebted to an article in the *Quarterly Review* for the knowledge that in at least one part of England mud is a building material. The writer of the article came to the conclusion that the city Cain built was of "cob," and that the tower of Babel was principally formed of the same material. The importance of this subject was illustrated by references to it in early mythology. A divine origin was generally given by the primitive religions to whatever was of high value to man; architecture, or building, on this account, was supposed to be derived from the Deity, and Sanconiathon, as well as Berosus, gives a mythic origin to sun-dried bricks, and to building houses with mud. A similar expression of idea is found in the Shah Nameh of Firdusi, where Jemshid is said to be the first teacher.

In the discussion which followed,

Mr. Alexander Finn, H.B.M. Consul at Resht, in Persia, said that he had been in Persia for eleven years, and while out on shooting excursions he had often put up in villages the houses of which were entirely constructed of mud. In fact, it would be said that north of the Elburz range, which ran through the north part of Persia, every village was built of wattle and mud, and every village to the south of mud without any wattle. Indeed, he did not know of a single town in Persia not built of mud, with the exception of some of the principal buildings, which were constructed of stone or kiln-dried bricks. He was sorry that he could not quite agree with one of Mr. Simpson's remarks about the dado. This, he believed, was not intended to protect the walls from the men's backs, for during all his sojourn in the East, he could not remember once seeing an Oriental with his back touching the wall. The dado was intended rather to protect the lower part of the wall from damp. The floors being made of the same muddy material as the walls were apt to become dusty, so that each time they were swept the watering-pot had to be used. These mud walls, generally speaking, did not last very long, and the moment a house was deserted, or left for any reason, it seemed to begin to tumble down. In the plain of Verameen could be seen the walls of an old city called Erig still standing, though nothing whatever of the town remained.

Professor Kerr proposed a vote of thanks to Mr. Simpson for an exceedingly appropriate, useful, and learned paper. The subject might be of more interest to them than Mr. Simpson would suppose, because they, as architects, fully appreciated what he had called mud building, only they did not like to use the word "mud." Indeed, he almost wished Mr. Simpson had not used the word. For himself, he should prefer to call it "earth-concrete." He merely suggested the term, and he would tell them why. There was a certain dignity,—and he spoke advisedly,—of building involved, which dignity had been the theme of Mr. Simpson's discourse throughout, but which was not indicated by the manner of the application of the term "mud." Might not he put it historically in this way,—first, they had "earth-concrete"; secondly, soft brick; thirdly, hard brick; and fourthly, lime-concrete, stone not being involved here at all? These four materials looked at historically constituted a complete series of scientific building materials, and if Mr. Simpson would only consent to abandon the use of the word "mud," and adopt another more dignified term, the series was one which might be studied with

considerable interest and profit. He had ventured to apply the term "earth-concrete" quite on the spur of the moment, because they had reverted at last to the same form in their lime-concrete. He would suggest that the vault had probably its origin in the use of "earth-concrete," but not the arch. The arch, he believed, was proved by the remains of Egypt and Mesopotamia to have proceeded originally from the contact of two stones laid at an angle, and meeting together at the top, where the abutment at each end was sufficient to maintain them in position. They could follow the introduction of the arch as a stone feature from the beginning to the end, but they were not able to trace the origin of the vault to its very commencement, and he was therefore disposed, on the spur of the moment, to accept Mr. Simpson's suggestion that it had its origin in the use of "earth-concrete." With respect to unburned bricks there was a singular illustration of it in the legend of the building of the Tower of Babel.

Mr. Hugh Leonard seconded the resolution. Having been a good deal in India, and having seen many mud buildings, he could appreciate the learned and scientific paper they had listened to that evening. He did not like to object to the use of the word "mud," as the poor natives of India made much of it, and the daubing of the floor was really a modification of what the servants in this country did when using a white mixture to clean steps and floors. He happened to have a brick he had brought from the most perfect part of the Great Wall of China, which was there composed of sun-burned bricks, covered with parapets of burned bricks, and with a terrace of tile between them. Other portions of the Wall, which were built of stone, were by no means so strong as the parts constructed of sun-burned bricks.

The Chairman (Mr. Thomas Worthington, Vice-President) said that not the least interesting part of Mr. Simpson's communication was the exceedingly fine series of drawings exhibited on the wall. Mr. Anderson had made a personal reference to him (the Chairman), and to an essay he wrote in early life. He little thought when he received the medal from Earl de Grey, in the old rooms of the Institute in Grosvenor-street, that forty years afterwards he should occupy the chair on an occasion of this kind. He could remember that the researches necessary to produce a work consisting of some 200 quarto pages were very lengthy. He came across a great deal of mud architecture at the time, and sometimes found himself very much stuck in the mud. Indeed, the *Athenæum* of that day stated that he had exhausted the subject from the days of the Deluge down to the middle of the nineteenth century.

The vote of thanks was then put, and carried by acclamation.

Mr. Simpson, in replying, expressed his satisfaction at the manner in which the paper had been received. He was afraid Professor Kerr's recommendation had come too late. He (the speaker) would have no objection to changing the title, though he preferred the one he had adopted. Professor Kerr's title might be a little more scientific, but his own, he believed, would be better understood.

The Chairman announced that the next meeting would take place on the 14th inst., when a paper entitled "Notes made during Tours in Greece, 1881 and 1884," would be read by Professor T. Hayter Lewis, F.S.A., Past Vice-President.

Hygienic Exhibition at Warsaw.—Arrangements have been made for holding this year a hygienic exhibition at Warsaw. The exhibition will be divided into five groups, comprising, respectively, the hygiene of food, of dress, of dwellings, of schools, workshops, and hospitals, and, finally, statistics and meteorology. The opening is fixed for May 15th, the closing for July 1st.

The Cheap Application of Electricity.—The *Journal Officiel* contains a decree of the French Minister of Education appointing a Commission charged with considering a prize of 50,000 francs to the inventor of a cheap application of electricity to heating and lighting, chemical action, mechanical power, transmission of telegrams, or the treatment of the sick. The chairman of the Commission is M. H. Bertrand, Permanent Secretary of the Paris Academy of Sciences.

NATIONAL ASSOCIATION OF MASTER BUILDERS OF GREAT BRITAIN.

This Association held its half-yearly meeting on the 25th ult., at the George Hotel, Nottingham. Mr. W. H. Cowlin, of Bristol, presided, and representatives from London, Bristol, Bradford, Bolton, Birmingham, Manchester, Liverpool, Derby, Hull, Walsall, Lincoln, and Nottingham, were present.

The report and accounts for the past half-year were adopted and passed, and

The following gentlemen were appointed officers and Council for the ensuing year:—*President:* Mr. Robert Neill, jun., Manchester. *Vice-Presidents:* Mr. J. H. Colls, London, and Mr. Robert Dennett, Nottingham. *Hon. Vice-Presidents:* Mr. Stanley G. Bird, London, and Mr. W. H. Cowlin, Bristol. *Hon. Treasurer:* Mr. J. C. White, Liverpool. *Hon. Auditor:* Mr. Jos. Stevenson Jones, Liverpool.

The following gentlemen were appointed to serve on the Committee:—Birmingham, Mr. John Bowen and Mr. W. Sapcote; Bolton, Mr. Joseph Henry Marsden; Bradford, Mr. William Moulson and Mr. John E. Bealand; Bristol, Mr. A. Krauss; Edinburgh, Mr. Thomas Bonnar; Hull, Mr. R. Beevers; Lancaster, Mr. William Huntington; Leeds, Mr. C. Tomlinson; Lincoln, Mr. William Henry Close; Liverpool, Mr. James Bromley and Mr. James Pendleton; London, Mr. Thomas Rider; Manchester, Mr. William Southern and Mr. William Browne; Northampton, Mr. W. H. Smith; Nottingham, Mr. Enoch Hind; St. Helens, Mr. R. Belsher; Wigan, Mr. Charles B. Holmes; Wolverhampton, Mr. G. Higham; and the Presidents of the Local Associations as Members of the Council, *ex officio*.

In the evening the representatives of the various Associations were entertained at dinner by the President of the Nottingham Association.

It was resolved to hold the next meeting of the Association in Glasgow.

THE INSTITUTE OF BUILDERS.

The annual general meeting of this Institute was held at the Offices, 31 and 32, Bedford-street, Strand, on Tuesday last, Mr. George Burt, J.P., in the chair. The secretary, Mr. Richard S. Henshaw, read the report, from which we extract the following passages:—

"The Council, in presenting their Third Annual Report, are pleased to be able to state that during the past year the number of members has been increased by twenty-eight, making a total of seventy-one. They also have to announce that Mr. Robert Mitchell, President of the Melbourne Builders' Association, has been elected an honorary member, but they regret to have to record the death of Mr. George Shaw.

The advisability of the admission to the Institute of Associates was discussed at the commencement of the year, but it was considered by the Council that the time had not arrived for the extension of the Institute in that direction. The matter is, however, to be again brought forward at an early date.

The question of the 'Non-acceptance of the Lowest Tender,' in limited or select competitions, was referred to the Institute by the Committee of the Central Association of Master Builders of London, and the matter has been left to two members of the Council to draft a resolution to be presented to the Royal Institute of British Architects, calling the attention of that body to the subject.

Two Amendment Bills to the Employers' Liability Act (1880), having been introduced into the House of Commons, they were referred to a Select Committee of the House for consideration and report. Evidence was given by the President and Mr. W. H. Cowlin as to the working of the Act, especially with the object of showing the necessity for retaining the clause compelling notice of accident to be given to the employer within a reasonable time of its occurrence, and having the meanings clearly defined of the words 'employer,' 'contractor,' and 'sub-contractor.' The Select Committee have since reported to the House in favour, generally, of the proposed Amendments, and as the Act expires with the present year the Government have announced their intention of introducing a new Bill.

The Metropolitan Board of Works introduced a 'Water Supply Bill' and a 'Bill to Regulate the Keeping of Firewood' (calculated to affect the storing of timber by builders, &c.), but the former did not reach a second reading, and the latter was withdrawn.

The Council saw no reason to object to the new By-laws as to Concrete Buildings introduced by the same body.

It is generally understood that a 'Sanitary Registration of Buildings Bill' will be brought before Parliament next session, rendering it obligatory on the part of the 'owner, lessee, sub-lessee, or occupier' in towns of over 50,000 inhabitants, to deposit with a 'Registration Authority' a certificate that the sanitary condition of any building, occupied or intended to be occupied, is satisfactory. The Council are watching this Bill closely, and will consider it their duty to oppose any such measure unless very considerably modified as to the manner in which its provisions are proposed to be carried out.

As the members are doubtless aware, a Benevolent Fund had for several years been in existence in connexion with the late Builders' Society; this has now been transferred to the Institute in the names of Messrs. George Plucknett, Stanley George Bird, and Frederick John Dove, as trustees, and is invested in New Three per Cent. Consolidated Annuities. . . . .

Mr. Benjamin Hannen having resigned his trusteeship of the funds of the Institute, Mr. John Howard Colls was appointed to fill the vacancy thus occasioned.

The Council, being desirous of establishing a library in connexion with the Institute have the pleasure to announce that a special fund has been started for that purpose. . . . .

The Council, after due consideration, have decided that a course of papers on subjects of interest to the building trade shall be read at the Institute. . . . .

In accordance with the Articles of Association, the President, Mr. Stanley G. Bird; one of the Vice-Presidents, Mr. George Burt; the Treasurer, Mr. George Plucknett; one of the Auditors, Mr. Herbert H. Bartlett; and four members of the Council. Mr. Woodman Hill, Mr. W. S. Horner, Mr. Robert Neill, jun., and Mr. Joseph Randall, retire, but are eligible for re-election."

The Chairman, in moving the adoption of the report, said he was pleased to be able to say that a standing committee on Practice had been appointed by the Royal Institute of British Architects, who had under their consideration the Conditions of Contract.

The motion for the adoption of the report having been agreed to,

Mr. J. Howard Colls was elected President for the ensuing year, Mr. H. T. Ashby as Vice-President, and Mr. Woodman Hill, Mr. W. S. Horner, Mr. R. Neill, jun., and Mr. Joseph Randall were re-elected on the Council. Mr. G. Plucknett, J.P., and Mr. H. H. Bartlett were re-elected as treasurer and auditor respectively. Mr. Stanley G. Bird was elected a member of the Council, in the place of Mr. H. T. Ashby, after having filled the office of President for two years, for which service he was accorded a very cordial vote of thanks.

ELECTION OF SUPERINTENDING ARCHITECT:

METROPOLITAN BOARD OF WORKS.

At the meeting of the Metropolitan Board of Works on the 28th ult., Mr. George Edwards (Deputy Chairman) moved the adoption of a report of the Works and General Purposes Committee, submitting the names of the following six candidates for the office of superintending architect, and recommending that the Board do proceed* to elect one of them to fill the vacant office:—Mr. T. Blashill, Mr. H. Gundry, Mr. A. Peebles, Mr. R. Plumbe, Mr. P. G. Smith, and Mr. E. J. Tarver.

After it had been decided, on the motion of Mr. Williams, to take the voting by ballot,

The Chairman of the Board (Sir James McGarel-Hogg) read a paper detailing the duties of the office as follows:—"To be Superintending Architect of Metropolitan Buildings, and to be Architect and Superintending Architect of and to the Board, at a salary of 1,500*l.* per annum, payable quarterly. To perform all the duties, statutory or otherwise, of the above-mentioned offices, and such other duties as have hitherto been performed by the Board's architects, and also to perform all such duties as the Board may from time to time direct. To be removable at the Board's pleasure. And the Board authorises the persons appointed to exercise the powers of entering and inspecting, and all other powers exercisable by Architects of the Board, and by virtue of the 21st Section of the Metropolis Management and Building Amendment Act, 1878, or otherwise, under any statute or bye-laws."

The voting was then proceeded with, and a very tedious business it was. The following is a record of it,—

	First Vote.	Second Vote.	Third Vote.	Fourth Vote.
Blashill, T.	14	17	20	27
Gundry, H.	3	—	—	—
Peebles, A.	19	20	23	25
Plumbe, R.	13	12	10	—
Smith, P. G.	4	3	—	—
Tarver, E. J.	0	—	—	—

Mr. Blashill was therefore declared to be duly elected, and on the motion of Mr. Edwards the common seal was ordered to be affixed to the deed of appointment.

Mr. Blashill, addressing the Board, said,—Sir James Hogg and Gentlemen,—I beg to thank you most heartily and sincerely for the honour you have done me in electing me to this highly-important office. No one can understand better than I do how it is that my majority is so narrow. It is because my good friend against me was so well worthy of the appointment. I hope that under the circumstances I shall so perform the duties of my office as to give

* This was not the way in which the recommendation was put on the Board's *agenda* paper, owing to the ambiguity of which we were last week beguiled into announcing that the election would not take place till Feb. 4.

satisfaction to every member of the Board. I am now about to enter on a most honourable office, and I hope I shall be able to carry it out with great cordiality with all the other officials of the Board of whatever degree.

[Mr. Thomas Blashill, it may be mentioned, was a pupil of Mr. T. E. Knightley. He has been for twenty-five years in practice, and for the last ten years a district surveyor. He was elected an Associate of the Royal Institute of British Architects in 1866, and a Fellow in 1877. He is also a Fellow of the Surveyors' Institution, and some years ago he was President of the Architectural Association, in whose work he has continued to take a very active interest. We cordially re-echo the congratulations which were given utterance to at the Institute of Architects on Monday evening last, and which are reported in another column.]

THE USE OF MORTAR DURING FROST.

SOME time ago the police authorities of Berlin issued an order forbidding the construction of brickwork, should the temperature fall to or below 2° R. (26° Fahr.). This order being based on the supposition that mortar freezes at that temperature, and does not set, Herr Krause, architect, of Stropp, sent a communication to the *Baugewerke-Zeitung*, in which he publishes his experiences, which by no means seem to bear out the necessity for issuing the order. We give a *résumé* of Herr Krause's remarks, as well as of the opinions of some other German architects upon the matter. Herr Krause states that in the winter of 1856 he was compelled to erect a small building during a very sharp frost, the temperature being down to from 4° to 8° R. (23° to 14° Fahr.). As bricks and sand were frozen, his workmen had great trouble in properly setting the bricks, the mortar freezing under their hands. It would have been too expensive to warm all the materials previously. He, therefore, had the lime slaked in small quantities, mixed the mortar hot, and had the brickwork liberally pointed. He fully expected to find the mortar perished in the spring; but he was greatly mistaken, for the work was as firm as if it had stood for several years. In 1880 he had to take the same building down, when the mortar was found so firm that the bricks broke, and could be cleaned only with difficulty. Herr Krause subsequently had outer pointing done at several degrees of frost, and always found that, if lime mortar had been subjected to frost for about ten days, it had set as firmly as mortar made in the summer in as many months. The architect in question says that, if it freezes, and the frost continues for some time, it is much firmer than when applied in the height of the summer. It is different when a sudden thaw sets in after a sharp frost. Herr Krause had executed, during an alteration, a wall 10 mètres high and 3 mètres wide, with three windows placed over each other, and joined to an old brick wall, when suddenly a thaw set in. The wall settled about 6 centimètres, and bulged out, so that he had great trouble in preventing it from collapsing. A sudden frost, however, made it firm again. After twenty years the wall is as good as ever, and there are no cracks. In that case, however, he had omitted to use unslaked lime, employing only hot water. The bricks had been stored in a heated room. Herr Krause has come to the conclusion that continued frost has the contrary effect upon mortar to what is generally supposed. Herr A. Klemm, architect, of Stuttgart, expresses the same opinion in a communication which he sends to the *Deutsche Bauzeitung*, in which he says that in the winter of 1848-9 the works required for altering and fitting up the Prussian House of Deputies had to be carried out during a most severe frost. Notwithstanding this fact, the brickwork, executed with freshly-slaked hydraulic lime, was found to be so firm in 1867, when alterations had to be made, that in some portions wedges had to be used in breaking it up. Herr Klemm adds that in his country (Würtemberg) it is the general opinion that frost not only does not injure the brickwork, nor the plastering, but it improves its quality. The frost, however, should continue for some time. Herr Klemm expresses surprise that doubts could be entertained on the subject. A Berlin firm of builders, Herren Ende & Böckmann, writing on the same subject to the *Deutsche Bauzeitung*, state that, in the autumn of 1864, they had orders to erect a warehouse near Unter den Linden during the winter. They were at first indisposed to undertake such work in that season; but circumstances demanded speed, and building operations were continued during the frost. They fully expected to find the brickwork faulty in places when the spring came, and had made up their minds that they would have to replace some of it. They were agreeably surprised to find the brickwork perfectly sound; in fact, it seemed to have set exceptionally well. Since that time, the above Berlin firm of builders have not hesitated to continue bricklayers' work as long as they could; that is to say, as long as the water did not freeze on the bricks or the mortar in the pans. It should be added that the lime mortar used at Berlin is said to be of exceptionally good quality.

ARCHITECTURAL SOCIETIES.

Birmingham Architectural Association.—The members of this association made a visit on Saturday afternoon last to the new Conservative Club, Temple-row, Birmingham. The building is erected in the Roman Renaissance style, and has every convenience and comfort of a modern club. Messrs. Osborn & Reading, the architects to the club, met the members and kindly conducted them over the new premises. Messrs. Barnsley & Sons, of Birmingham, are the builders.——The sixth ordinary meeting of the current session was held at Queen's College on Tuesday evening last. Mr. E. F. Tibley was nominated for membership. A paper was read by Mr. W. Henman on "Terra Cotta and Stone." A discussion ensued in which Messrs. H. Clere, John Cotton, E. Wood, W. H. Bidlake, and Victor Scruton (Hon. Secretary), took part. A vote of thanks, proposed by Mr. H. Clere and seconded by Mr. W. H. Kendrick, was unanimously accorded to Mr. Henman for the very able manner in which he had set forth the respective merits of the two materials. After a response from Mr. Henman the meeting terminated.

Manchester Architectural Association.—At the ordinary fortnighly meeting, held at the Diocesan Buildings, on the 25th ult., Mr. L. Booth in the chair, Mr. J. E. Phythian read a paper on "Mr. Ruskin's Writings on Architecture," in which he said criticism in England was pre-eminently associated with three names, John Ruskin, Matthew Arnold, and P. G. Hamerton. The last two writers were by many people considered safer guides than Mr. Ruskin; but, without entering into comparisons of that kind, it might be noticed that Mr. Ruskin's criticisms covered a much wider range of subjects than did those of the other two. He never seemed contented to consider any branch of art or life detached from the rest, but strove to bring all into what he considered their relation with each other. It was not to the erection of large public buildings we were to look for establishing a school of architecture, but through our domestic buildings, Gothic architecture had developed from the burgher's house, and without the domestic architecture of the Middle Ages the glories of the minster would have been impossible. Every profession was dependent on its clients, and a demand for noble architecture was much to be desired to-day. Mr. Phythian then referred to Mr. Ruskin's definition of architecture, which, he said, was generally considered too narrow. Mr. Ruskin drew a sharp line between building and architecture, and relegated to the former much that was usually included in the latter. It was no use disputing over definitions, but assuredly this was true, the greater the part that sculpture and painting played in architecture, the higher was the position it took as a fine art. Soundness of construction and beauty of proportion were essentials, but sculpture and painting were the crowning glory, and although they were not wedded in every building, yet no great school of architecture could exist if the architects were not masters in both arts. Mr. Phythian then discussed "The Seven Lamps of Architecture" and the "Stones of Venice," dealing at length with Mr. Ruskin's preference for Gothic, which preference, he said, arose from, amongst other things, the greater opportunities which that style gave for developing the higher intellectual power of the workman. Classical architecture was satisfied with a narrower perfection. Messrs. Colley, Hodgson, Mee, Hewitt, and the Chairman took part in the discussion which followed.

THE ACCIDENT AT ISLINGTON WORKHOUSE.

SIR,—I have read with some surprise a report in the *Times* of remarks made by the Coroner for Central Middlesex on the gallery which lately fell, with fatal results, at Islington Workhouse. That officer is reported to have said at the inquest,—"Such a case does not come under the Building Act. It was erected in a private room. Any one could have a gallery erected in his private house without having it inspected by a surveyor."

Supposing this to be correctly reported,—and if it be incorrect, the report uncontradicted is equally likely to mislead,—it is worth while to point out that a workhouse is a public building, and that every part of it, including galleries, is to be constructed as the District Surveyor may approve, and, in the event of disagreement, as the Metropolitan Board may direct; and that the builder (in this instance a foreman) consequently was bound to give notice, and his employers are culpably negligent in not having given directions that notice should be given. As the gallery appears to have been movable and taken down and rebuilt within six months, it is to be hoped that the District Surveyor will see it to be his duty to proceed against the builder in question, not for the sake of pressing hard upon a poor fellow who has the consciousness of a grievous calamity upon him, but as a public warning that notice must be given in all such cases.

A DISTRICT SURVEYOR OF TEN YEARS' STANDING.

"SANITARY INSTITUTE OF GREAT BRITAIN EXAMINATIONS."

SIR,—I have read with interest the correspondence of the 8th, 22nd, and 29th ult. There is one matter touched upon by "W. H. Colbran," which I think it well to emphasise, and that is the amount of the fee payable upon entrance for examination. I certainly think that five guineas is excessive, and specially so, considering it is paid whether a candidate passes or not.

The fee charged by the Royal Institute of British Architects to candidates for the examination for the District Surveyorships in London, or the Building Surveyorships under Local Authorities, is two guineas. The Association of Municipal and Sanitary Engineers and Surveyors' examination fee is three guineas; and, judging from the papers set, these are far superior to those held by the Sanitary Institute.

Some time ago I addressed the secretary upon what, in my opinion,—and, I doubt not, in that of many others,—is an excessive fee, and the advisability of consideration by the Council of lowering the same. It would certainly interest many intending applicants to know whether anything is likely to be done in this direction.

F. T. R.

A NEW SAFETY MINING CARTRIDGE.

SIR,—This invention, described in your issue of January 22nd, 1887, p. 142, appears to be based upon erroneous chemical data.

The inventor claims (see *Gluckauf*, No. 16, 1886) that in a cartridge 180 mm. long and 25 mm. diameter, whose cubical contents are 90 cm^3, the production of hydrogen from 12 grammes of zinc will be 3·37 m^3 and the pressure 37,000 atmospheres.

According to formula $Zw + H_2SO_4 = H_2 + ZwSO_4$, 65·2 grammes of zinc will produce 2 grammes 22·32 litres of hydrogen. 12 grammes of dust will contain about 10 grammes of zinc, and the volume of hydrogen produced will be 3·423 litres. If this volume be compressed into a space of 90 cm^3, the pressure will be 38, and not 37,000 atmospheres.

It is somewhat extraordinary that the description of this invention and the above-named inaccuracy has appeared in many English and foreign papers without correction.

J. MALTON BROWN.

"MASONS' WAGES."*

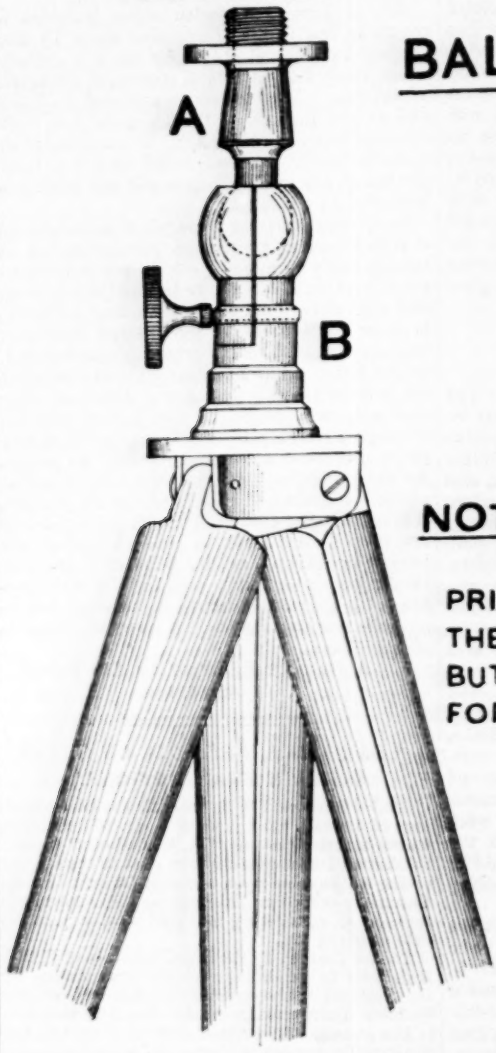
SIR,—As one of the delegates appointed by the Masons of London to investagate the system of working, and wages paid to the masons employed at the restoration of Buckingham Palace I send you the following facts for publication in your next issue.

It was reported to one of our London Lodges, that the masons working at the above job was receiving one penny per hour under the curant rate and also that they were working 2½ hours per day overtime, it was decided to send a deputation to Messrs. Pery & Co. the contractors to ask them if they would stop the overtime, so that more of the masons who were out of work might be employed, and also if they would discontinue paying at this reduced rate, as we did not consider it just to the

* See letters, pages 133 and 165, *ante*.

FIGURE 1

BALL AND SOCKET STAND



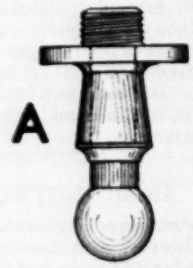
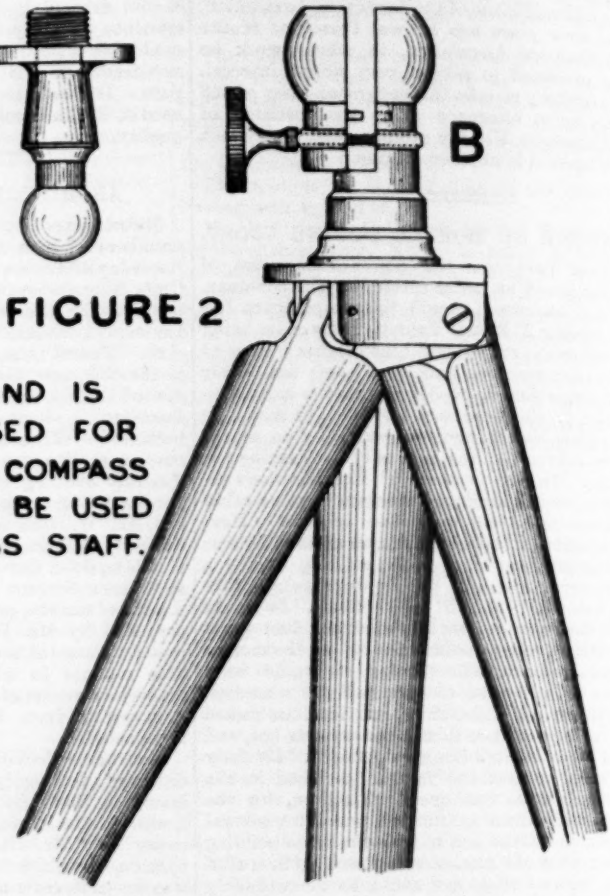


FIGURE 2



NOTE

THIS STAND IS PRINCIPALLY USED FOR THE PRISMATIC COMPASS BUT CAN ALSO BE USED FOR THE CROSS STAFF.

mployers who had done the Government work before they received the contract, and who had paid the full wages to the masons employed for the differant Government jobs, we saw one of the Firm who told us that he was not aware that the masons was working overtime, but he would enquire into the matter and if he could he would put a stop to it, for he did not agree with men working overtime. We then went into the question of wages, and he told us that the men imployed were on the staff, and were old and infirm men, who were not worth more than the price they were paying them, this we knew to be wrong, for the Foreman had given men (who were not Old and infirm) work, and had told them that they was not paying the full wages, he said if such was the case they had not set the men on at the yard and he seposed the Clerk of Works had done so, and he could not do anything in it, so we left him and then proceeded to the Palace to see the Clerk of Works, and after waiting an hour we saw him come in from Buckingham Palace Road, and ran after him but he would not deign to see us, although he did not know what we had come about he refered us to Messrs. Pery & Co we told him we had seen this Firm, but that they could not do anything in the case and that we had come to consult him, but he said he would not have anything to say to us and kept walking away, so the London Lodges Committe decided to send a deputation to the first Commissioner of works, we was unable to see that Gentleman, but was received by Mr. Primrose, his Secretary, and Mr. Taylor, Surveyor, who received us with every respect, and, after explaining our mission they promised that the afair should be investagated and if the overtime could be stopd it should be done, and I received a letter the next day from Mr. Primrose, to say that overtime would be discontinued on that job we then went into the Question of wages, but they was unable to do anything in that, for they said that although the contractors was paid a price for the work that would enable them to pay men the proper wages, never the less if the Contractors got the work done to the Satisfaction of the Surveyor and only paid the men 2d. per hour they could not interfeare but of course it would be more profit for the contractor, and they also told us that in some cases were extra skilled labour was required, they (the Government) paid extra wages for the work done to the contractors, but weather they paid the *man* or *men* anything extra, they could not say; and if they did not, this again would be extra profit. With regard to the Clerk of Works putting on men, Mr. Taylor said that he had nothing to do with that, nor yet with what wages they should receive, but he said that he would find out weather the Clerk of Works had put men on or not. We thought it would be adviseble to see Messrs. Perry & Co. again, which we did the following day. At first we was refused an interview, but after sending in word to the effect that we had been to whitehall, we was addmitted, and after telling him what Mr. Primrose and Mr. Taylor had said about his having a price for his work that would enable him to pay proper wages he said that was his business but with regard to the men working on this job he had nothing to add to what he had already said, but when he imployed masons at any of his other jobs he always paid the full amount.

One of the delegates reported to the perticular Lodge, that first found out what was going on at Buckingham Palace, and the members thought they was quite as able to judge who was old and infirm men, as Messrs Pery & Co was and therefore acted in what they thought was just to the employers who had done the work for the Government before Messrs Pery & Co got the Contract and also to the Members of Our Noble Society, who when they get Old and infirm like A. B. C. they have a fund that pays them so much a week and so prevents them from having that dread of what the imployers will do to them.

A. Robins
Secy London Lodges Committee
O. S. M.

*** We give the above, spelling and all, as the "Noble Society's" statement on their side of the dispute, leaving our readers to form their own judgment as to the social and economic aspect of the affair.

"How to Ensure Healthy Homes."—This was the subject of an able lecture recently delivered by Professor Henry Robinson, C.E., at Swanage, a place which, judging from an official report recently mentioned in our columns, would seem to be in some need of the instruction which Professor Robinson is so well able to give.

The Student's Column.

FIELD WORK AND INSTRUMENTS.—VI.

Surveying Instruments.

VI.—THE PRISMATIC COMPASS (*continued*).

THE reading upon the card described in our last article gives the magnetic azimuth of the object observed. The term "azimuth" is used to express the horizontal angle by which the direction of a vertical plane passing through a station point and a given object, deviates to the right of another vertical plane, which passes through the given station and the north pole. When magnetic azimuth is specified, the angular deviation is reckoned from the magnetic meridian instead of the true meridian. The plane in which the needle remains at rest is called the magnetic meridian. As the magnetic poles which attract the magnet do not correspond with the poles of the earth, it is plain that the needle cannot point due north and south except in those countries where the true and magnetic meridians coincide. The deviation between these two directions is different in different places, and continually varying in the same place. The circle which divides the eastern and western hemispheres is called the astronomical meridian, because, when the sun appears to the south part of it, it is then meri-dies, or mid-day. At midday the sun has attained its greatest altitude for that day, and as the sun is never at this altitude at two places east or west of one another at the same time, each of these places has its own meridian, and these pass through different degrees of the Equator.

The circle or horizon is divided into thirty-two parts, each subtending an angle at the centre of 11¼ degrees. The four cardinal points are termed north, south, east, and west. The intermediate points will be best remembered by attending to those in one quadrant, say, from north to east, and afterwards repeating the whole. They are as follows,—N., N. by

E., N. N. E., N. E. by N., N. E., N. E. by E., E. N. E., E. by N. E. From a map published at the Admiralty, under the superintendence of Capt. F. J. Evans, F.R.S., in the year 1880, it appears that in the eastern hemisphere there is little or no variation on a line drawn through St. Petersburg, passing west of Moscow and east of the Black Sea, thence proceeding by the south-west coast of India through the territory of Western Australia. To the east of this neutral line the variation increases eastwards, being in the year 1880 about 3°E. at Calcutta, 8°E. at Melbourne, 13°E. at Tobolsk, in the north of Asia, but afterwards decreases further east to zero between Canton and Amoy, upon the south-east coast of China, the curve of no variation running between Formosa and the Philippine Islands, passing through the North Pacific Ocean, the east coast of Asia, and the north-east of Siberia. To the west of the neutral line in the eastern hemisphere the variation increases westwards, being 15° W. between the islands of Majorca and Minorca, 19° W. at Cape St. Vincent, and 20° W. at Sierra Leone. In Iceland the amounts vary from 34° W. upon the south-east coast, to 42° W. upon the north-west coast. In Cape Town the variation is about 30° W.

At the present time upon the east coast of Ireland, and in the North Channel, the variation of the needle will amount to about 22° W. Upon the west coast of Wales, the east coast of the Isle of Man, and the centre of Scotland, 21° W. On a line drawn through Lancashire, Glamorganshire, Devonshire, and Cornwall, 20° W. On a line drawn through the East Riding of Yorkshire, Nottingham, Gloucester, and Dorsetshire, 19° W. On a line through Norfolk, Suffolk, Surrey, and Sussex, 18° W., being 17° 50′ at London.

In the western hemisphere in the year 1880, there was little or no variation upon a line drawn through the west coast of Hudson's Bay, the east coast of Lake Superior in North America, the west coast of Lake Erie, between Canada and the United States, thence passing through Washington and Charleston, Puerto Rico among the West Indian islands, and between Barbadoes and Trinidad, to the north-east coast of South America, crossing that continent to the South Atlantic Ocean at San Paulo. To the west of this neutral line the magnetic curves increase eastward in variation being 10° E. at the Fiji Islands, decreasing thence towards zero at a point in the mid-Pacific Ocean. It increases also to 23° E. to Vancouver's Island, decreasing to a line of no variation along the China coast. To the east of this line in the western hemisphere the magnetic curves increase westward in variation, being 13° W. at Montreal and at Pernambuco. Jamaica, at the present time, is about 3° E.

These angles of deviation from the true or astronomical meridian are continually varying. At Greenwich, in the year 1576, the magnetic variation was 11° 15′ E.; and between 1657–62 there was no variation. In 1820 it was about 24° 11′ W. The needle is also subject to diurnal fluctuations, the north end being drawn most to the west at about 2 p.m., and most to the east during the night or early morning. The amounts, however, are inconsiderable, except when magnetic storms occur, which produce great disturbances.

In fig. 5 of the illustration given in our article last week, two positions of the needle are indicated, one direction reading 34° and the other 337°. The difference between these two azimuths would express the angle taken in the direction of the hands of a watch, which the objects viewed, would subtend at the point of vision. An azimuth exceeding 180° denotes that the direction of the object to which it is measured lies to the left of the direction from which azimuths are usually measured. For practical purposes a surveyor may express these two directions as being in one case 34° E., and in the other case 23° W., of the magnetic meridian, the excess of 360°, above the angle read, being taken when that angle is greater than 180°.

The prismatic compass is generally made as shown in figure 4 of our illustration last week, to be held in the hand for sake of portability, but it can also be made of larger diameter with an uncovered glass top, as shown in fig. 3 of the annexed illustration, and constructed to fit on to a ball and socket stand, the details of which will be clear upon reference to figs. 1 and 2. Fig. 2 shows the parts which are fixed together in fig. 1. When the prismatic compass is thus set up, horizontal angles can be measured from the magnetic meridian upon level ground with sufficient accuracy for filling in the minor portions of a survey. It should be borne in mind that the presence of iron, whether in the shape of heavy keys or of an iron chain lying along the ground or the vicinity of an iron bridge, may exercise an influence over the observed bearings to a very important extent.

Fig 3

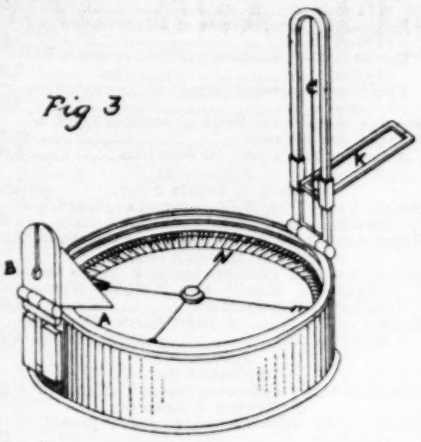


Fig 4

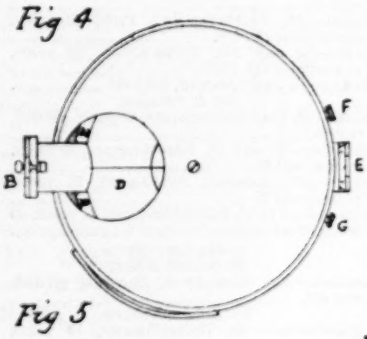


Fig 5

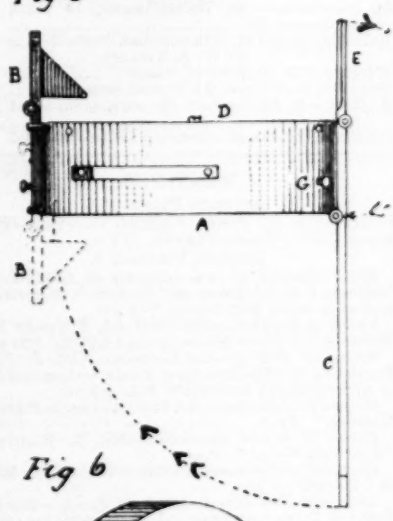


Fig 6

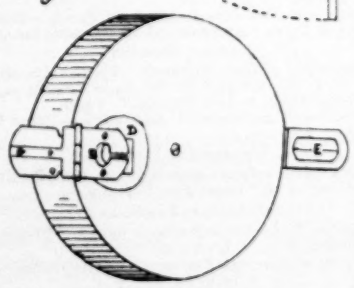
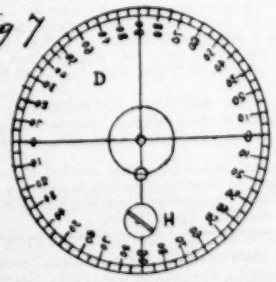


Fig 7



Sometimes a mirror, marked K in fig. 3, is supplied with a prismatic compass, and is intended for the purpose of reflecting objects above or below the level of the observer. The mirror can be placed with its face upwards or downwards, and can be removed at pleasure. It is made to slide up and down with sufficient friction to remain at any part of the back of the vane C that may be required.

VII.—THE COMPASS CLINOMETER.

Figs. 4 to 6 illustrate a combined prismatic compass and clinometer, the former to record horizontal angles, the latter to record vertical angles. Fig. 4 shows a plan of the additional arrangements which are fitted on to the underside of the prismatic compass for this purpose, so that when the prismatic compass shown in fig. 3 is turned over, its side elevation will be as indicated in fig. 5. The sight-vane C being turned down upon the box in the direction indicated by the arrow upon the dotted line in fig. 5, the compass card is thrown off its bearing. A short sight-vane marked E, equal in height to the depth of the box, is raised at right angles as shown. When not in use as a clinometer the sight-vane E folds back outside the box, and when thus folded back upon the edge of the box, it clamps the clinometer card D in the same way as the folding down of the sight-vane C clamps the compass card A. The same prism, marked B, is available for reading both the compass card and the clinometer card, the prism being made to turn upon a pivot, half way round in one direction, and is provided with a stop in the other direction to enable the surveyor to place it at right angles to the box in the positions shown by full and dotted lines in figure 5. When taking vertical angles the instrument is held between the thumb and the first and third fingers in the position shown in fig. 6, the second finger being placed upon a button marked F, which presses a spring, by which the swing of the clinometer card is regulated. This card, D, is provided with an attached lead weight marked H in fig. 7, and is graduated as shown from zero upon a horizontal line to 90° at the top and bottom of the card. The figures upon the card are reversed so as to be read by the prism in the same manner as the figures upon the compass card. Either hand is selected according to the light. In fig. 6 the face of the clinometer is to the right. It is recommended that in taking vertical angles the line of sight should be directed at first upon some object in the same vertical plane, either above or below that which it is desired to observe, and the card brought to rest by the employment of the regulating button, F. When perfectly steady gently raise or lower the sight-vane E, until the central hair or wire cuts the line of sight ranging between the eye and the point observed. In order to change the instrument into a prismatic compass it is only necessary to fold down the sight-vane E, to turn the prism B to the reverse side of the box, and to raise the sight-vane C. This combination of compass clinometer has been patented by Lieut.-Colonel O'Grady Haley.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

1,126, Cements. C. D. Alison.

The cement which is the subject of this patent is claimed to be waterproof and fireproof, and is particularly applicable for internal decorations and as a lining for kilns and such-like purposes. The principal ingredient is a non-diatomaceous silicious earth, found in a natural condition in the West of England, and which the inventor calls silexine.

2,419, Fixing Door Handles. J. Hicken.

According to this invention the square spindle is screw-threaded in the ordinary way. One handle is permanently fixed to the spindle, and the other is fitted with two small projecting buttons or studs. When a disc with slots is forced against these projections they engage the spindle and handle, being afterwards further secured by a screw on the outer edge.

2,727, Fire Stoves, Ashpans, &c. A. W. Woodhead.

This invention consists in simply rolling or bending the mouldings used in place of casting them. For corners and bends a special method of bending and rounding is devised by means of a block curved to the radius required with the plinth or bead cut thereon. A roller with a similar configuration is then used with it.

4,103, Setting Saws. R. Elliott.

The appliance which is the subject of this invention acts by setting the teeth of a saw at different

angles to the blade by striking them with a peculiar tool, which is divided at its lower end into a number of parts corresponding in length to the pitch of the teeth, and cut away alternately to right and left angles. Or a metallic disc cut away in a similar manner is used.

12,857, Securing Screws, or Nails, to Brackets, &c. H. Munslow.

This invention consists in utilising an ordinary wooden screw or an ordinary nail in manufacturing brackets, cup-hooks, hat and coat hooks, and such like articles, especially where one screw or nail will support the article. The nail or screw is either fastened to the article by a die which spreads the head a little, or by a washer and riveting.

11,983, Locks and Latches. F. T. Davies.

The bolt or catch of these locks and latches is of a peculiar pear-shaped form, and the mechanism is ingeniously adapted for throwing back this latch by a movement of the door-knobs, while the key locks the action with but very few parts, and in a very simple manner.

11,855, Attachment to Shafts, Tools, and Picks. T. Brown.

The insertion of a double wedge in the handle or shaft of the tool, and the affixing of a peculiarly-formed shield over the top of the said shaft, are the chief features of this invention.

NEW APPLICATIONS FOR PATENTS.

Jan. 21.—943, J. Stewart, Flushing Valve for Water-closets.—962, W. Thompson, Door Locks.

Jan. 22.—1,010, Hurdle and Miles, Ventilators for Walls, Ceilings, Roofs, &c.—1,024, A. Illidge, Indicator and other Fastenings for Doors.—1,032, W. Griffith, Clip or Holder for Roofing, &c.—1,039, C. Schlickey, sen., Moulding Bricks, Tiles, &c.

Jan. 24.—1,083, B. Tryer, Fire-grates.—1,111, J. Colbran, Fire-places.

Jan. 25.—1,143, A. Butt, Window-sash Fasteners.—1,151, C. Pielsticker, Plate Glass.—1,178, W. Sinclair, Spiral Staircases.—1,188, E. Ellington, Hydraulic Lifts.—1,191, Walker & Mills, Securing Wood Flooring-blocks. — 1,193, W. Eckstein, Ventilators.

Jan. 26.—1,219, W. Lunt, Door or Finger Plates.—1,224, Roberts and Osborne, Valveless Syphon Flushing Cisterns.

Jan. 27.—1,272, E. Gietaert, Door Locks.—1,294, T. Brown, Raising, Lowering, and Balancing Sashes.—1,327, C. Williams, Covering Ironwork with Fireproof Encasements.

PROVISIONAL SPECIFICATIONS ACCEPTED.

15,825, H. Hill, Barrel and other Bolts.—15,875, J. Coppard, Preventing the Rattling or Jarring of Windows or Doors.—16,293, J. Ickringill, Securing and Ornamenting Parquetry.—16,697, W. Buchanan, Feed Mechanism for Vertical Saw Frames.—176, Wilson & Johnson, Ventilating Apartments.—178, Murgatroyd & Turner, Device for Paint Brushes, &c.—366, T. Sterne, Ventilating Rooms or Buildings.—437, J. Thompson, Ventilators and Chimney Cowls,—15,769, M. Crofton, Attaching Sash-lines to Window Frame.—15,925, S. Rogers, Preventing the Rattling of Window Sashes. — 16,213, W. Murray, Window Sashes and Frames.—16,390, L. Oppenheimer, Wood Block Flooring.—16,514, Wedenby & Dodd, Chisels, Screw-drivers, &c.—16,520, T. Lowcock, Door Springs.—16,570, Abercrombie & Hall, Door Handles or Knobs.—17,139, A. Layer, Automatically Opening and Closing Doors.—78, J. Gray, Automatic Door Holder.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

3,123, H. Rothery, Locks and Latches for Doors, &c.—3,481, H. Owens, Locks and Latches to suit either Right or Left Hand Doors.—3,941, W. Macvitie, Attaching Door Knobs and Handles to Spindles.—4,101, S. Bamford, Chimney Tops.—14,384, S. Robson, Ventilating Rooms.—16,522, C. Grellmann, Apparatus for Drawing or Painting upon Walls, Ceilings, &c.—16,920, H. Bright, Water Meters.—3,645, O. Lindner, Decoration of Wood, &c.—4,243, J. Brierley, Ornamenting Wooden Floors, &c.—4,331, G. Couch, Roofing and Flushing Tiles.—4,439, J. Sharp, Chimney Cowl and Ventilator.—15,024, Sudbury & Spreadburey, Chimney Tops and Ventilators.—17,016, O. Flagstad, Window Construction.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

JANUARY 13.

By Buckland & Sons.

West Drayton, Horton-lane—An enclosure of freehold land, 8a. 2r. 24p.	£2,250

JANUARY 21.

By Debenham, Tewson, & Co.

Kensal Green—37 to 67 odd, St. Margaret-road, freehold	2,370
54 to 68, even, Earlsmead-road, freehold	1,477
Felixstowe-road—Fourteen plots of freehold land	697
Earlsmead-road—Twenty-one plots of freehold land	972
Hiley-road—Seven plots of freehold land	329
Hazel-road—Two plots of freehold land	102

JANUARY 25.

By Debenham, Tewson, & Co.

Brixton—61, Holland-road, 36 years, ground-rent 6*l.* 6s.	450

By Broad & Wiltshire.

Holloway—8 to 14, even, Seven Sisters-road, 74 years, ground-rent 120*l.*	4,590

By Chinnock, Galsworthy, & Co.

Kensington, Russell-road—Ground-rents of 220*l.*, reversion in 74 years	£6,385
Holland-road—Ground-rents of 150*l.*, reversion in 74 years	4,185
Russell-gardens—Ground-rents of 56*l.*, reversion in 74 years	1,560
Elsham-road—Ground-rents of 23*l.*, reversion in 74 years	555
Russell-road—Ground-rents of 120*l.*, reversion in 74 years	3,260
Russell-mews—Ground-rents of 44*l.*, reversion in 74 years	1,075
Swansea, South Dock—Freehold rental of 1,600*l.* a year, term 975 years	41,700
A rental of 100*l.* a year, for same term	2,600

JANUARY 26.

By C. C. Taylor & Son.

Poplar—8 to 14 even, Willis-street, and 1, 2, and 3, Greenfield-street, freehold	880
Haggerston—13, 14, and 15, Edith-street, freehold	1,050

By H. Haines & Son.

Piccadilly — The freehold premises known as "Hatchett's Hotel," and "White Horse Cellars," with the goodwill	65,000
Stafford — The lease of the "North-Western Hotel"	4,000

JANUARY 27.

By Dale & Son.

Mile End—68, Duckett-street, freehold	290

By Newbon & Harding.

Hoxton — 44, Newton-street, 45 years, ground-rent 4*l.* 4s.	330
14, Clinger-street, 22 years, ground-rent 3*l.* 4s.	185
New North-road—32 and 34, St. Paul-street, 40 years, ground-rent 8*l.* 8s.	720
Canonbury—66, Marquis-road, 59 years, ground-rent 8*l.*	420
Islington—38, Highbury New Park, 63 years, ground-rent 13*l.* 10s.	1,000
Dalston—228 and 230, Queen's-road, 28 years, ground-rent 12*l.* 16s.	530
Holloway—34, Junction-road, freehold	870

By E. Stimson.

Brixton—326, Cold Harbour-lane, 65 years, ground-rent 8*l.*	620
Bermondsey—26 and 27, Harvel-terrace, 30 years, ground-rent 8*l.*	440
Lambeth—107, Lambeth Palace-road, 22 years, ground-rent 9*l.*	400
Blackfriars—22 to 25, Salutation-place, 22 years, no ground-rent	255

JANUARY 28.

By Green & Son.

Shoreditch—108, High-street, 70 years, ground-rent 65*l.*	1,390

By Messrs. Elgood.

St. Marylebone—38, Welbeck-street, 13 years, ground-rent 30*l.*	880
Holloway—94 and 96, Elthorne-road, freehold	560

By W. B. Hallett.

Wapping—113, High-street, freehold	720
City—108, Fore-street, the lease of, term 6 years	295
Hackney—5, Annis-court, 78 years, ground-rent 4*l.* 4s.	225
Sandhurst, Victoria-rd—Seven plots of freehold land	30

MEETINGS.

SATURDAY, FEBRUARY 5.

Association of Public Sanitary Inspectors.—Fourth annual dinner, Guildhall Tavern. 6 p.m.

MONDAY, FEBRUARY 7.

Royal Academy of Arts (*Lectures in Architecture*).—Professor J. H. Middleton on "Methods of Decoration as applied to Greek Architecture." 8 p.m.

Society of Engineers.—The President, Professor Henry Robinson, will deliver his Inaugural Address. 7·30 p.m.

Society of Arts (*Cantor Lectures*).—Dr. J. L. W. Thudichum on "The Diseases of Plants, with special regard to Agriculture and Forestry." III. 8 p.m.

Surveyors' Institution.—Mr. T. A. Dickson on "Artificial Manures." 8 p.m.

Clerks of Works' Association.—Mr. R. Wheeler on "Stonefield Slating." 8 p.m.

Liverpool Architectural Society.—Mr. G. H. Morton on "Colour." 7 p.m.

Leeds and Yorkshire Architectural Society.—Mr. E. H. Jacob, M.D., on "Architectural Treatment of the Organ."

TUESDAY, FEBRUARY 8.

Institution of Civil Engineers.—Further discussion on Mr. W. J. Dibdin's and Mr. W. Santo Crimp's papers on "Sewage Sludge and its Disposal." 8 p.m.

Manchester Architectural Association.—Paper by Mr. Stelfox. 7·30 p.m.

WEDNESDAY, FEBRUARY 9.

York Architectural Association.—Mr. T. Stockton Worthington on "Decoration." 7·45 p.m.

THURSDAY, FEBRUARY 10.

London Institution.—Professor Silvanus Thompson on "Electric Bells." I. 6 p.m.

Society of Telegraph-Engineers and Electricians.—8 p.m.

FRIDAY, FEBRUARY 11.

Royal Academy of Arts (*Lectures in Architecture*).—Professor J. H. Middleton on "Methods of Decoration as applied to Roman Architecture." 8 p.m.

Society of Arts (*Indian Section*).—Dr. Watt, C.I.E., on "The Economical Condition of India. 8 p.m.

Bradford Historical and Antiquarian Society.—Mr. J. Lister, M.A., on "Gleanings from Old Halifax Life." 7·30 p.m.

SATURDAY, FEBRUARY 12.

Architectural Association.—Visit to Church at Wimbledon. 3 p.m. (*Postponed from Feb.* 5. See advertisement.)

Surveyors' and Auctioneers' Clerks' Provident Association.—Annual Meeting, Auction Mart. 3 p.m.

Edinburgh Architectural Association.—Visit to Magdalen Chapel and High-street closes.

"A Reversible Rim Lock."—Referring to our notice a fortnight ago (*Builder*, January 22, p. 162) of the new reversible rim lock introduced by Mr. James Hill, we would correct a slip of the pen which occurred in the last line but one of the second paragraph, where, for "*inwards*," the word "outwards" should be substituted.

Miscellanea.

Handicraft Instruction.—A valuable series of lectures in handicrafts is being delivered weekly to School Board masters, at the Guilds Institute, in the theory and practice of carpentry and joinery, so as to enable them to teach these crafts to their pupils. The lessons are alternatively devoted to theory and practice. Professor Unwin was invited to lecture to the Board School masters on the scientific knowledge connected with carpentry; and, in doing so, presented to his hearers a model of didactic style more important to them than even the subject treated. The lesson which was given last Saturday was purely practical. In front of the professor's desk in the large lecture-hall of the Guilds Institute was placed a carpenter's bench; and, instead of a learned professor, an intelligent, practical carpenter, Mr. Robertson, instructed the class. At first sight, there does not seem to be much to be said about the use of a saw and a plane; and most people would think themselves capable of using both without any teaching. Yet, there is a right and a wrong way of handling tools; there is also, what is even more important, a methodical system of working which leads safely to a satisfactory result, whereas a haphazard system, or, rather, the absence of system, is the fruitful cause of bad work. After the lecture, the members of the class went down to the workshop to practice what had been explained to them.

Sanitary Registration of Buildings Bill. A special meeting of the Council of the Sanitary Assurance Association was held on Monday last for the final revision of the above Bill before presentation to the House of Commons, Sir Joseph Fayrer, K.C.S.I., F.R.S., in the chair. The new measure was adopted by the Council, and in the absence from England, of Dr. Farquharson, M.P., it was decided to ask Mr. C. C. Lacaita, M.P., to take charge of the Bill in the House of Commons. The Bill, as introduced in 1886, consisted of ten sections, and, it will be remembered, made the sanitary registration of all buildings compulsory in towns of 50,000 inhabitants and upwards. The new Bill consists of seventeen sections, and is to apply to all towns or districts of 2,000 inhabitants, but it is only to be compulsory in the case of schools, colleges, hospitals, asylums, hotels, and lodging-houses. An important feature of the new Bill is that the local authorities will have to keep a sanitary register in which any building certified in accordance with the proposed Act may be registered, so that a stranger visiting any district would be able to ascertain at the office of the Local Authority whether any particular house was or was not certified as in a satisfactory sanitary condition. By the provisions of the new Bill, all persons entitled to certify must first obtain a licence from the Local Government Board, and examining Boards are to be appointed. Persons entitled to sign certificates are to be designated "Licentiates in Sanitary Practice."

Birmingham Students of the Institution of Civil Engineers.—The Association of Birmingham Students of the Institution of Civil Engineers held their first Meeting at the Colonnade Hotel, Birmingham, on the 27th ult., to hear a paper read by Mr. R. Peirce, Stud. Inst. C.E., upon the "Kidderminster Sewerage and Water Supply." Mr. E. Pritchard, M. Inst. C.E., the President, was in the chair. Mr. R. Peirce, in his paper, gave a very interesting description of the past and present sanitary condition of the town of Kidderminster, upon which had been expended in 1874 over 100,000*l.* in the construction of sewerage and water-works.

London and County Banking Company (Limited).—The report and balance-sheet of this company, for the half-year ending Dec. 31st, which are published *in extenso* on our last page of advertisements this week, show that, after paying interest to customers and all charges, making provision for bad and doubtful debts, and allowing 37,000*l.* odd for rebate on bills not due, the net profits amount to 215,870*l.*, which, added to 17,000*l.* odd brought forward from last account, produces a total of 233,598*l.* 19s. 10d. The directors, at the meeting held on the 3rd inst., recommended a dividend of ten per cent. for the half-year, making twenty per cent. for the year 1886. This was adopted.

The Court of Common Council on Thursday decided to place in the Guildhall a bust of the late Earl of Iddesleigh.

Nineteenth Century Art Society.—Saturday, the 12th inst., has been appointed for the Private View of the Spring Exhibition of this Society, at the Conduit-street Galleries, and the Exhibition will open to the public on Monday, the 14th instant.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	10	0	7	0	0
Teak, E.I. ....load	9	0	0	14	0	0
Sequoia, U.S. ....foot cube	0	2	4	0	2	7
Ash, Canada ....load	3	0	0	4	10	0
Birch ,, ...	2	5	0	3	10	0
Elm ,, ...	3	10	0	4	10	0
Fir, Dantsic, &c.	1	10	0	4	0	0
Oak ,, ...	2	10	0	4	10	0
Canada	3	0	0	6	0	0
Pine, Canada red	2	0	0	3	10	0
,, yellow	2	5	0	4	0	0
Lath, Dantsic ....fathom	3	0	0	5	0	0
St. Petersburg	4	0	0	5	10	0
Wainscot, Riga ....log	2	15	0	4	0	0
,, Odessa, crown....	3	5	0	3	7	6
Deals, Finland, 2nd and 1st...std.100	7	0	0	8	0	0
,, 4th and 3rd	6	0	0	6	10	0
Riga	5	10	0	7	0	0
St. Petersburg, 1st yellow	8	10	0	14	0	0
,, 2nd ,, ...	7	0	0	8	0	0
,, white	7	0	0	10	0	0
Swedish	6	0	0	15	0	0
White Sea	7	0	0	17	10	0
Canada, Pine, 1st	17	0	0	29	0	0
,, ,, 2nd....	11	0	0	17	0	0
,, ,, 3rd, &c....	6	0	0	8	0	0
,, Spruce, 1st	8	0	0	11	0	0
,, 3rd and 2nd....	5	0	0	7	10	0
New Brunswick, &c.	5	0	0	7	0	0
Battens, all kinds	4	0	0	12	0	0
Flooring Boards, sq. 1 in., prepared, First	0	9	0	0	13	0
Second	0	7	6	0	8	6
Other qualities	0	5	0	0	7	0
Cedar, Cuba ....foot	0	0	3	0	0	3½
Honduras, &c.	0	0	2½	0	0	3½
Australian	0	0	2	0	0	3
Mahogany, Cuba	0	0	4	0	0	7
St. Domingo, cargo average	0	0	4	0	0	7

TIMBER (*continued*).	£.	s.	d.	£.	s.	d.
Mahogany, Mexican, cargo av.	0	0	3½	0	0	4½
Tobasco ,, ...	0	0	4	0	0	6
Honduras ,, ...	0	0	4	0	0	6
Maple, Bird's-eye	0	0	6	0	0	8
Rose, Rio ....ton	7	0	0	10	0	0
Bahia....	6	0	0	10	0	0
Box, Turkey ....ton	5	0	0	17	0	0
Satin, St. Domingo ....foot	0	0	6	0	0	10
Porto Rico	0	0	7	0	1	0
Walnut, Italian	0	0	4	0	0	5
METALS.						
IRON—Bar, Welsh, in London...ton	4	7	6	4	15	0
,, in Wales	4	2	6	4	7	6
,, Staffordshire, London	5	10	0	6	0	0
Sheets, single, in London	6	15	0	8	10	0
Hoops ,, ...	6	0	0	7	0	0
Nail-rods ,, ...	5	15	0	6	10	0
COPPER—						
British, cake and ingot ....ton	42	0	0	43	0	0
Best selected	43	0	0	44	0	0
Sheets, strong....	50	0	0	51	0	0
Chili, bars	38	17	6	39	0	0
YELLOW METAL ....lb.	0	0	4	0	0	4½
LEAD—						
Pig, Spanish ....ton	12	12	6	0	0	0
English, common brands....	12	17	6	0	0	0
Sheet, English	13	15	0	14	0	0
SPELTER—						
Silesian, special ....ton	14	12	6	14	15	0
Ordinary brands....	14	10	0	14	12	6
TIN—						
Straits....ton	102	0	0	102	7	6
Australian	102	10	0	0	0	0
English ingots	105	10	0	0	0	0
OILS.						
Linseed ....ton	20	7	6	20	15	0
Cocoanut, Cochin	36	0	0	37	0	0
Ceylon	26	5	0	26	10	0
Palm, Lagos	23	10	0	0	0	0
Rapeseed, English pale	23	5	0	0	0	0
,, brown	21	15	0	0	0	0
Cottonseed, refined	18	5	0	20	0	0
Tallow and Oleine	25	0	0	45	0	0
Lubricating, U.S.	5	0	0	7	0	0
,, refined....	5	0	0	12	0	0
TURPENTINE—						
American, in casks ....cwt.	1	8	0	0	0	0
TAR—						
Stockholm ....barrel	0	15	0	0	15	6
Archangel	0	11	6	0	12	0

COMPETITIONS AND CONTRACTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Re-Seating Chapel and New Schools	Wesley and Centenary Chapels' Trustees...	15*l.* 15s. and 10*l.* 10s....	March 1st	ii.
Imperial Institute of the United Kingdom, &c.	Sir Frederick Able	200*l.* each for six ...	May 14th	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Granite Curb	East Ham Local Brd.	W. H. Savage	Feb. 8th	ii.
Lamp Columns	Willesden Local Board	O. Claude Robson	do.	ii.
Works and Materials	do.	do.	do.	ii.
Sewerage Works and Carbolic Disinfectants...	Westminstr Bd. of Wks	G. R. W. Wheeler	Feb. 8 & 16	ii.
Watering and Cleansing Roads	Crown Est. Paving Com.	*Official*....	Feb. 9th	ii.
Burning Ballast	Southend Local Board	F. H. Tulloch	Feb. 11th	ii.
New Theatre, Crewe....	Crewe Lyceum Bldngs Co., Lim.	Darbyshire & Smith ...	Feb. 14th	ii.
Road Materials and Works....	Kingston Highway Brd.	A. J. Henderson	Feb. 16th	ii.
Road Making and Paving Works	Hammersmith Vestry...	*Official*	do.	ii.
Carrying-away Slop, &c., by Barges	Lambeth Vestry	H. McIntosh....	Feb. 17th	ii.
Works and Materials	do.	do.	do.	ii.
Reconstruction of Drainage, &c., Work....	Met. Asylums Board ...	A. & C. Harston	Feb. 21st	xx.
Flood Works	Cor. of Leicester	J. Gordon	Feb. 23rd	ii.
Hospital Buildings	Merthyr Hospital Com.	T. C. Wakeling	Feb. 24th	ii.
Paving and Making-up Road, &c....	Bromley U. R. S. A. ...	*Official*	do.	xx.
Schools	Portsmouth School Bd.	C. W. Bevis	do.	ii.
Works and Materials	St. Pancras Vestry....	W. B. Scott	Feb. 28th	xx.
Alterations to Langley Lodge, Headington ...	....	— Pither	Not stated...	xx.
Alterations to York Gate House, Broadstairs	....	do.	do.	ii.
Finishing 8 Houses, and Erecting 9 others...	J. Grayson....	....	do.	xx.

TENDERS.

ACTON.—For the erection of six houses in Shad-road, East Acton, for Mr. George Wright. Mr. Edward Monson, architect, Acton :—

G. Lyford, 266, Uxbridge-road*	£7,200	0	0

* Accepted.

AYLESBURY.—For the erection of new stable buildings and repairs to house, St. John's Lodge, Stone, for General Smyth. Messrs. Tatham & Flower, architects, Clement's Inn, London. Quantities by Mr. W. F. Taylor, Aylesbury :—

H. H. Sherwin, Waddesdon.....	£1,040	0	0
Mayne & Ball, Aylesbury	994	10	0
G. Green, Cuddington.....	989	0	0
Webster & Cannon, Aylesbury	957	0	0
S. Grist, Bierton*	948	0	0

* Reduced to £915 and accepted.

BOW BRICKHILL (Bucks).—For alterations to farm house at Bow Brickhill. Mr. F. Gotto, architect, Leighton Buzzard :—

Whiting, Little Brickhill	£209	0	0
Welsh, Fenny Stratford	197	19	6
Webb, Leighton Buzzard	175	0	0
Gates, Fenny Stratford	152	10	0

ENFIELD.—For completing residence, "Rougemont," on Byculiah Park Estate, Enfield, for Messrs. Flint & Gardner. Mr. Harold O. Jackson, architect :—

J. Bunce.....	£380	0	0
J. Bentley	320	0	0
T. Bugden (accepted).....	310	0	0

CLAYGATE (Surrey).—For erecting residence for Mr. Alfred Pearce Jones. Mr. Owen Lewis, architect, 79, Mornington-road, Regent's Park :—

Williamson.....	£3,683	17	0
J. Grove & Co.	3,435	0	0
Henley & Co., Norwood.....	3,236	0	0
Roberts, Norwood	3,160	0	0
Marriot Brothers, Barnet	3,000	0	0
Okenden, Anerley.....	2,873	0	0
Masters, Roberts, & Rice, London ...	2,788	0	0
W. & J. Croaker, London	2,770	0	0
Langley & Co., Crowley.....	2,736	0	0
Snell & Co., London	2,645	0	0
Tinson, London.....	2,615	0	0
Staines & Son, London	2,585	0	0
Petters, Horsham.....	2,500	0	0
Bull & Son, Southampton	2,490	0	0
Woodgar & Son, Horsham	2,453	0	0
Goodwin, London	2,453	0	0
Riley, London	2,160	0	0
King, Rudgwick	2,158	0	0

CLERKENWELL.—For erecting a warehouse, and repairs, at No. 12, Red Lion-street, Clerkenwell, for Mr. Lewis. Messrs. New & Son, architects :—

Colwill.....	£1,284	0	0
Tenant	984	0	0
H. Pickeragill & Co.....	924	0	0
Bamford.....	875	0	0
Killingback.....	865	0	0
Longmire & Burge	855	0	0
Mark	848	0	0
Munday & Son (accepted).....	845	0	0

HADLEY WOOD.—For houses on the Beech Hill Park Estate. Mr. Edwin T. Hall, architect, Moorgate-street :—

Foster & Dickson, Rugby*	£14,682	0	0

* Accepted.

HOLLOWAY.—For alterations and enlargement of warehouse, Holloway, for Messrs. Mummery & Co. Mr. F. Boreham, architect, Finsbury-pavement :—

Bradford.....	£1,172	0	0
Richards	1,164	0	0
Oldis Bros.....	1,070	0	0
Roberts	1,045	0	0
Grover & Son.....	940	0	0
Ward & Lamble.....	893	0	0
J. Anley	870	0	0

ISLINGTON.—For erecting partitions in all departments at Hanover-street Board Schools, for the School Board for London. Mr. T. J. Bailey, architect :—

E. Green	£419	0	0
W. Oldrey & Co.	372	0	0
N. Richards	353	10	0
C. Dearing & Son.....	313	0	0
A. W. Derby.....	297	0	0
G. S. Pritchard & Son	293	15	0
Cowley & Drake	254	10	0

KEMPSTON (Beds.).—For additions to vicarage, for the Rev. A. Whitmarsh. Mr. John Day, architect and surveyor. Quantities supplied :—

J. Smith, Bedford	£950	0	0
F. G. Cherry, Bedford	780	0	0
G. Haynes, Bedford	755	0	0
Thos. Spencer, Bedford	749	0	0
W. Warton, Bedford	720	0	0
J. P. White, Bedford.....	709	0	0
S. Foster, Kempston	679	0	0

KENSINGTON.—For alterations and additions to the Laundry, &c., of Kensington Workhouse, for the Guardians of St. Mary Abbotts, Kensington. Mr. H. H. Bridgman, architect, Poultry. Quantities supplied by Mr. F. Thomson :—

Wall Bros.....	£749	0	0
S. R. Lamble.....	724	0	0
Cooper & Leakey.....	720	0	0
North Bros.....	698	0	0
J. W. Dixon	686	0	0
Campkin & Son.....	653	0	0
Richardson Bros.....	634	0	0
W. Oldrey & Co.	630	0	0
J. M. Goodwin	611	10	0
F. R. Tozer	606	10	0
Harper Twelvetrees	600	0	0
C. Simmons	594	0	0
G. Stephenson	588	0	0
H. L. Holloway.....	577	0	0
Neave & Neave.....	555	0	0
Newton & Idle	552	0	0
F. R. Turtle	543	0	0
Webb & Rosser.....	537	0	0
E. Wildman	505	0	0
H. Haynes (accepted)	475	0	0

KENSINGTON.—For sundry alterations and additions to the Doctor's House, Kensington Workhouse, for the Guardians of St. Mary Abbotts, Kensington. Mr. H. H. Bridgman, architect, Poultry :—

H. Haynes (accepted).....	£115	0	0

KENTISH TOWN.—For bar fittings at the Black Cap Public-house, Kentish Town. Messrs. Furniss & Thorpe, architects :—

J. Anley	£356	0	0

LONDON.—For additions, alterations, and decorations at 32, York-terrace, Regent's Park, for Mr. F. Davis. Mr. H. H. Collins, architect, Old Broad-street :—

J. Morris.....	£1,268	0	0
Shoolbred	1,264	10	0
Woodman	1,249	0	0
Vernon & Griffiths	1,240	0	0
Clark & Mannooch	1,190	0	0
Rosenberg	1,122	0	0
Ashby Bros.....	1,044	0	0

LONDON.—For rebuilding Nos. 123 and 124, Tottenham-court-road. Mr. George Edwards, architect. Quantities by Mr. H. Lovegrove :—

Stevens	£2,540	0	0
Martin, Wells, & Co.	2,536	0	0
Vears & Co.....	2,517	0	0
Charles Wall.....	2,478	0	0
W. Shepherd.....	2,474	0	0
Scharien	2,446	0	0
G. & J. Green	2,248	0	0
O. Craske	2,187	0	0
Stimpson & Co.	2,180	0	0
Brass & Son	2,153	0	0
Scrivener & Co.....	2,087	0	0
Ward & Lamble (accepted)	2,065	0	0

LONDON.—For alterations and repairs to No. 15, South-street, Finsbury, E.C., for Messrs. J. Armfield & Son. Mr. T. H. Smith, architect, Basinghall street :—

	General Works.			Including Cement Front, &c.		
A. W. Hammond	£985	0	0	£1,192	0	0
W. Gregar	947	0	0	1,076	0	0
W. Reason	792	0	0	947	0	0
H. S. Foster.....	892	0	0	939	0	0
Holliday & Greenwood...	720	0	0	925	0	0
J. Woodward	768	0	0	864	0	0
Allen & Sons	650	0	0	....		
J. W. Falkner (accepted)	647	0	0	755	0	0

LONDON.—For alterations to the Earl of Aberdeen, Roman-road, Old Ford :—

Gould & Brand (accepted)	£160	0	0

LONDON.—For bar fittings at the Three Tuns Public-house, Hatton-garden. Mr. Ansell, architect :—

J. Anley	£154	0	0

MONMOUTH.—For the erection of a public hall, for Mr. John Allan Rolls. Mr. F. A. Powell, architect :—

David Roberts (accepted).....	£4,044	12	0

[No competition.]

MONMOUTH.—For alterations at No. 13, Monnow-street, for Mr. John James. Mr. F. A. Powell, architect :—

W. Simmons (accepted).....	£135	0	0

NOTTING HILL.—For repairs to 132, High-street. Mr. Edwin T. Hall, architect, Moorgate-street:—
Head & Son (accepted) £193 0 0

PAIGNTON.—For the erection of two business premises at the Palace Estate. Mr. G. Soudon Bridgman, architect, Torquay:—

King & Son	£1,390	0	0
M. Bridgman	1,220	0	0
J. Yabsley	1,100	0	0
Drew Bros.	1,080	0	0
Henry Webber	1,060	0	0
Henry Rabbich (accepted)	1,000	0	0

[All of Paignton.]

ST. MARY CHURCH (Devon).—For a residence and surgery for Dr. W. S. Steele. Mr. G. Soudon Bridgman, architect, Torquay:—

E. P. Bovey, Torquay	£1,770	15	0
F. Matthews, Babbacombe	1,729	0	0
A. Harris, St. Mary Church *	1,673	0	0

* Accepted.

SANDY.—For proposed new business premises. Mr H. Young, architect, Bedford:—

Potter, Bedford	£1,399	0	0
Foster, Bedford	1,355	0	0
White, Bedford	1,309	0	0
Smith, Bedford	1,299	0	0
Harrison, Bedford	1,293	0	0
Haynes, Sandy	1,279	0	0
Woodman & Bartle, Potton	1,169	0	0
Bonfield, Sandy	1,156	0	0
Ellwood & Son, Sandy	1,145	0	0

SOUTHALL (Middlesex).—For converting the old laundry, &c., for the purposes of store rooms, &c., at the St. Marylebone Schools, Southall, for the Guardians of the Parish of St. Marylebone. Messrs. H. Saxon Snell & Son, architects, London:—
Wall Bros., London (accepted) £397 0 0

TORQUAY.—For additions to the Imperial Hotel, Torquay. Mr. G. Soudon Bridgman, architect, Torquay:—

Vanstone & Mumford, Torquay	£4,830	0	0
J. Smerdon, Torquay	4,800	0	0
R. W. Rowse, Plymouth	4,296	0	0
Crocker Bros., Torquay	4,145	0	0
A. Harris, St. Mary Church	4,129	0	0
J. Reed, Devonport	4,129	0	0
W. McKellar, Torquay	4,120	0	0
W. A. Goss, Torquay	4,000	0	0
F. Matthews, Babbacombe	3,999	0	0
E. P. Bovey, Torquay (accepted)	3,945	0	0

TUNBRIDGE WELLS.—For houses, Sandhurst-road. Mr. Edwin T. Hall, architect, Moorgate-street:—
A. A. Gale, Woking £5,289 0 0

TUNBRIDGE WELLS.—For the chancel, morning chapel, organ chamber, two vestries, and sacristy complete, and two-fifths of the aisle walls to the plates. All from the floor-line (the foundations being already built) of St. Barnabas Church. Messrs. J. E. K. and J. P. Cutts, architects:—
Thos. Williams (accepted) £5,638 0 0
[No competition.]

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